JSS ACADEMY OF HIGHER EDUCATION & RESEARCH
(DEEMED TO BE UNIVERSITY) MYSURU

GOLDEN JUBILEE 1973-2023
THE FUTURE IS HERE
JSS COLLEGE OF PHARMACY
MYSURU

25th ANNUAL NATIONAL CONVENTION

APTICON 2022

25th ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA,

SCIENTIFIC ABSTRACTS

PREFACE

This book reports the Proceedings of 25th Annual National Convention of Association of Pharmaceutical Teachers of India (25th APTICON) organized by JSS College of Pharmacy, a constituent college of JSS Academy of Higher Education & Research (JSS AHER), Mysuru from 2nd to 4th September 2022 at JSS AHER constituent colleges campus, SS Nagar, Mysuru. The theme of the conference was *"**Empowering Academia for Advancing Pharmacy Education"***. About two thousand pharmacy professionals, students, industrialists, pharmaceutical scientists, and pharmaceutical leaders from different states of the country took part in this three-day event.

APTICON-2022 provided a platform for the researchers, academicians, and scholars to present their findings. There was a huge response from the academia and industry partners for participating in the event. A total of 26 industrial sponsors and 27 academic sponsors supported the event. There were 35 distinguished invitees for conducting scientific sessions and 96 experts evaluating oral and poster presentations by registered delegates.

The Scientific Services Committee received 1093 abstracts for presentation. After the initial peer review, 830 abstracts were accepted for presentation. In total 273 oral presentations (in two sessions) and 557 poster presentations (in three sessions) were evaluated at the event in six subject areas: Pharmaceutical Technology and Pharmaceutics, Pharmaceutical Medicinal Chemistry/ Pharmaceutical Analysis; Pharmacognosy, Phytochemistry and Biotechnology; Pharmacology and Toxicology; Pharmacy Practice and Pharmacy Education; Pharmaceutical Regulatory Affairs and Pharmaceutical Quality Assurance.

The selected best 15 oral presentations and 15 poster presentations were honored during the valedictory of the APTICON-2022. The selected best abstracts from both oral and poster presentation will be given an opportunity to submit their full-length manuscript for publication (free of charge in) the Indian Journal of Pharmaceutical Education and Research (IJPER) journal in 2 special volumes slated to be released in December 2022 and February 2023.

The Scientific team and oral/ poster presentations team thank team members who with much dedication have given their constant support and priceless time to bring out the proceedings in a grand and successful manner. Our special thanks to the Patron, Co-patrons, Organizing team and APTI office bearers for their support and cooperation in the successful conduct of APTICON-2022. We would like to thank all the participants for their contributions to the conference and the proceedings.

Scientific Committee

25th APTICON 2022

25th ANNUAL NATIONAL CONVENTION

APTICON 2022

POSTER PRESENTATION

STREAM 1: PHARMACEUTICS	
Poster ID	**Name of the presenter**
PT/ST1/004	Asha P Johnson
PT/ST1/005	Eknath D. Ahire
PT/ST1/006	Madhuri D. Deshmukh
PT/ST1/007	Manoj Balaji
PT/ST1/008	Sheetal B. Gosavi
PT/ST1/009	Manjunath Mukkane
PT/ST1/0011	Kanchana Surnaik
PT/ST1/0012	Jyothi S L
PT/ST1/0014	Manisha Jadav
PT/ST1/0015	Surendra Singh Saurabh
PT/ST1/0020	Vishal Gurumukhi
PT/ST1/0021	Jyoti Maithani Kalra
PT/ST1/0023	Sandeep D S
PT/ST1/0024	Akhilesh Dubey
PT/ST1/0025	Manohar M
PT/ST1/0026	Shilpa Ek
PT/ST1/0027	Rajana A
PT/ST1/0028	Rahana Raveendran
PT/ST1/0029	Swathi Krishna .C
PT/ST1/0030	Chandhana Krishnan
PT/ST1/0031	Pradeep H K
PT/ST1/0034	Rangasamy Natarajan
PT/ST1/0035	Maitri K. Patel
PT/ST1/0036	Patel Shreya Vinodbhai
PT/ST1/0037	Mohammad Abuzar Shaikh Umer
PT/ST1/0038	Manoj Kumar R
PT/ST1/0039	Yogalakshmi.R
PT/ST1/0040	Rele Harshal Sanjay
PT/ST1/0041	Gajanand Ashokrao Jadhav
PT/ST1/0042	Patil Nagesh Yashwantrao
PT/ST1/0043	Priyadharshini. S
PT/ST1/0044	Adolf Russo J
PT/ST1/0045	Asmitha.R V
PT/ST1/0046	Jacqueline Graceina.J
PT/ST1/0047	Sandhiya M
PT/ST1/0048	T.Vishwa
PT/ST1/0049	Santanu Ghosh
PT/ST1/0050	Neethu Sreejan
PT/ST1/0051	Suchith S Shetty
PT/ST1/0052	Nayana Saji
PT/ST1/0053	Prajakta Sambhaji Sable
PT/ST1/0054	Pratiksha

PT/ST1/0055	Rajeshri Dhurke
PT/ST1/0058	Manusri Naredla
PT/ST1/0059	Prajakta Dhokale
PT/ST1/0060	Sumukh P R
PT/ST1/0061	Ms.Bhawana Rajaram Sonawane
PT/ST1/0063	Rakesh Rajendra Ozarkar
PT/ST1/0065	Praveen Shivanand Halagali
PT/ST1/0066	Mohit Mahesh Angolkar
PT/ST1/0068	V.Vishalachi
PT/ST1/0070	Shubhangi Vitthal Shekade
PT/ST1/0071	Sakshi Tiwari
PT/ST1/0072	Komal S
PT/ST1/0073	Purva Vijayrao Yeole
PT/ST1/0074	Vijaya Vishnu Kadam
PT/ST1/0075	Shivani Gajananrao Mutyalwar
PT/ST1/0076	Kolli Prabhanjan Kumar
PT/ST1/0077	Kanade Shradha Vitthal
PT/ST1/0078	Bakre Aarti Uday
PT/ST1/0079	Sushmita Ajay Sankeshwari
PT/ST1/0082	Samantha Neha Sequeira
PT/ST1/0083	Ameerunnisa
PT/ST1/0084	Suhana
PT/ST1/0085	Kamlesh J. Wadher
PT/ST1/0086	Gokul S
PT/ST1/0087	Athira A
PT/ST1/0089	Rashmi Trivedi
PT/ST1/0090	Gunaseelan J
PT/ST1/0091	SN Chethan
PT/ST1/0092	Karthick.S
PT/ST1/0094	Chandana An
PT/ST1/0095	Suma Naduvinamani
PT/ST1/0096	Shivayogi Sukumar Chougula
PT/ST1/0097	Komal Anil Patil
PT/ST1/0098	Spoorti Shivaji Malki
PT/ST1/0099	Vaibhavi Gurav
PT/ST1/00100	Suraj.C.M
PT/ST1/00101	Fatima Madras
PT/ST1/00103	Sakshi Kiran Pawar
PT/ST1/00104	Savita Mu
PT/ST1/00108	Navneet Godse
PT/ST1/00109	Amol A. Tatode
PT/ST1/00110	Rajendra Herur Vishnumurthy
PT/ST1/00113	R. Vishnuvardh
PT/ST1/00114	Neeraj Kumar Verma

PT/ST1/00115	Ujala G Raichur
PT/ST1/00117	Dhruti Avlani
PT/ST1/00118	Pratiksha C Chandragirivar
PT/ST1/00119	Shivaprasad Gd
PT/ST1/00120	Prajila A.
PT/ST1/00121	Kokila R
PT/ST1/00122	Manivasagan M
PT/ST1/00123	Prawin Kumar A
PT/ST1/00124	Jagadeeswaran M
PT/ST1/00125	Sandhiya S
PT/ST1/00127	Jayshree B. Taksande
PT/ST1/00128	Harikrishna N M
PT/ST1/00129	Hemant Kushwah
PT/ST1/00130	Preethi Sudheer
PT/ST1/00131	Sneha Sri Ramachandran
PT/ST1/00132	Neelesh Lodhi
PT/ST1/00134	Sharath H.P
PT/ST1/00135	Neha S. Raut
PT/ST1/00138	Radha Kalmegh
PT/ST1/00140	Kiran Raj G
PT/ST1/00141	Karishma Duhijod
PT/ST1/00142	Swati Digambar Malkote
PT/ST1/00143	Apurva Deshmukh
PT/ST1/00144	Rita Nutan Soyam
PT/ST1/00145	Keshav Shankar Hirave
PT/ST1/00146	Yogesh M. Amgaonkar
PT/ST1/00147	Rina B. Kosarkar
PT/ST1/00148	Vishal Ramesh Bisen
PT/ST1/00149	Rashmi Surve
PT/ST1/00150	Neha Shivathaya
PT/ST1/00151	J K Chandana
PT/ST1/00153	Bhagyashri Shriram Bhure
PT/ST1/00154	Arpit Mishra
PT/ST1/00155	Aafrin
PT/ST1/00157	Veeta Halemani
PT/ST1/00158	Vipin Wankhede
PT/ST1/00156	Arjita Mukherjee
PT/ST1/00160	Nisha E
PT/ST1/00162	Anirudha Ghete
PT/ST1/00163	Rushab Chandak
PT/ST1/00164	Dr Yogeshkumar Gavhane
PT/ST1/00165	Shivadarshan J
PT/ST1/00166	Mahadeva Swamy S
PT/ST1/00167	Arjun D S

PT/ST1/00168	Jay Jayantilal Vansjaliya
PT/ST1/00169	Aditi Dash
PT/ST1/00170	Shrujal Nani Naik
PT/ST1/00171	Akash S
PT/ST1/00172	Sathveeka Narayanan
PT/ST1/00173	Chithra R
PT/ST1/00174	Harish R Patil
PT/ST1/00175	Meghana T S
PT/ST1/00176	Nitheesh T
PT/ST1/00177	Balasubramanya P K
PT/ST1/00178	Isnagari Phaneendra
PT/ST1/00179	Nupur Choudhary
PT/ST1/00180	Babitha C
PT/ST1/00182	Charvi Kubde
PT/ST1/00183	Munawara.P.T
PT/ST1/00184	Vishwas Jibkate
PT/ST1/00185	Rutuja Harishchandra Yadav
PT/ST1/00186	Harsha Hemraj Shendurkar
PT/ST1/00188	Trinkal Vijay Manapure
PT/ST1/00189	Manasi S. Thakre
PT/ST1/00190	Anandhi . R
PT/ST1/00191	Chetana Jeetendra Shelote
PT/ST1/00192	Ankita Raut
PT/ST1/00193	Manobala P
PT/ST1/00194	Karthikesavan P
PT/ST1/00195	Ilakya . E
PT/ST1/00196	Swati Valmiki
PT/ST1/00197	Madhubala .V
PT/ST1/00198	Suhas N S
PT/ST1/00199	Venkatesh
PT/ST1/00200	Akash Singh Panwar
PT/ST1/00201	Jain Divya
STREAM 2: CHEMISTRY AND ANALYSIS	
Poster ID	**Name of the presenter**
PT/ST2/001	S G Vasantharaju
PT/ST2/003	Paul Richards M
PT/ST2/004	Chaithanya A
PT/ST2/005	Chaganti Soujanya
PT/ST2/006	Rakesh Uttamrao Shelke
PT/ST2/008	Durgesh Paresh Bidye
PT/ST2/009	Soundaryashree N R
PT/ST2/0011	Yogesh A
PT/ST2/0012	Likitha R
PT/ST2/0013	Vinod Kumar Gurjar

PT/ST2/0014	Shivani M Patel
PT/ST2/0017	Vilas Raghunath Jagatap
PT/ST2/0019	Janwade Rutuja Atul
PT/ST2/0021	Aisha Noor
PT/ST2/0022	Khushi Upadhyay
PT/ST2/0023	Harsha K Tripathy
PT/ST2/0024	Sandeep Shivaji Pathare
PT/ST2/0025	Jobin Ravi
PT/ST2/0026	Swapnil Shivaji Kamble
PT/ST2/0027	Vidudala Meghana
PT/ST2/0028	Mallikarjun Siddappa Wader
PT/ST2/0030	Amruta M Balikai
PT/ST2/0031	Prateek A Angadi
PT/ST2/0032	Deepak Shivappa Shanawad
PT/ST2/0033	Basavaraja Pujar
PT/ST2/0034	Alok Pratap Singh
PT/ST2/0035	Gokul Kumar.K
PT/ST2/0036	Neha Dattatray Naikwadi
PT/ST2/0037	Shivraj. Shivayogi. Hurkadli
PT/ST2/0038	Ajay Kale
PT/ST2/0039	Payal Ramesh Kute
PT/ST2/0040	Gaurav Rameshrao Ghuge
PT/ST2/0041	Sivakumaaran S
PT/ST2/0042	Buvana C
PT/ST2/0043	Karche Payal Manik
PT/ST2/0044	Shubham R. Patil
PT/ST2/0045	Manjunatha E
PT/ST2/0046	Gresi Devidas Mate
PT/ST2/0047	Jijo Shaji Varughese
PT/ST2/0048	Shravani Sachin Kachure
PT/ST2/0049	Nitin Vilas Kokare
PT/ST2/0050	Riya Babu
PT/ST2/0051	Deepak K. Lokwani
PT/ST2/0052	Jaime Mary Mendonsa
PT/ST2/0053	Bakhita Jessila M
PT/ST2/0054	Shishir Kumar Prasad
PT/ST2/0055	Ayushi Chawla
PT/ST2/0056	Yukesh Kumar S
PT/ST2/0057	Akhila Gandraju
PT/ST2/0059	Jothikanth V
PT/ST2/0060	Sanchalika Mishra
PT/ST2/0062	Mohammed Uzair Khan
PT/ST2/0063	Pratik Biswas
PT/ST2/0064	Varun.H.B

PT/ST2/0066	Lisma Babu
PT/ST2/0068	Karen Dsouza
PT/ST2/0069	Bhavya K B
PT/ST2/0070	Sumera
PT/ST2/0071	Manoj S Charde
PT/ST2/0072	Rita D Chakole
PT/ST2/0074	Rajitha K
PT/ST2/0076	Revathi .P
PT/ST2/0077	Vasantha T.S
PT/ST2/0079	Siva Subash Chowdary Nekkanti
PT/ST2/0080	Anjani Manoj Nikhare
PT/ST2/0081	G Thirumalesh Yadav
PT/ST2/0082	Nithiya. B
PT/ST2/0083	B. Rahini
PT/ST2/0084	Vijay. S
PT/ST2/0087	Tejaswini Pramod Masne
PT/ST2/0088	Balabhadra Phani VSSK Bhaskar Vinay
PT/ST2/0089	Vinod
PT/ST2/0090	Hemanth Atluri
PT/ST2/0091	Sushmita Irayya Hiremath
PT/ST2/0092	Pooja Koganole
PT/ST2/0093	Sumita Kumari
PT/ST2/0094	Aishwarya Pattanshetty
PT/ST2/0095	Rudranil Karmakar
PT/ST2/0096	Kavyashree R
PT/ST2/0097	Vinay Kumar S
PT/ST2/0098	Akash Hari Jadhav
PT/ST2/0099	Sachin Ashok Dhawale
PT/ST2/00100	Meera Rajendran
PT/ST2/00101	Debarya Banerjee
PT/ST2/00103	Anjali Kj
PT/ST2/00104	Varsha Tiwari
PT/ST2/00105	Ananthu A
PT/ST2/00106	Lathamani.L
PT/ST2/00107	Shwetha K
PT/ST2/00108	Chandappa
PT/ST2/00109	Mohan Shivanagouda Patil
PT/ST2/00110	Muralikrishna.Muggu
PT/ST2/00111	Hema Sravya Saridevi
PT/ST2/00112	Sanjai S
PT/ST2/00113	Harshitha Bv
PT/ST2/00114	Swapna Vemireddy
STREAM 3: PHARMACOGNOSY	

Poster ID	Name of the presenter
PT/ST3/001	Aswatha Ram H N
PT/ST3/004	Santanu Saha
PT/ST3/005	Sujit K Nagare
PT/ST3/008	Khushi Ayub Jamkhane
PT/ST3/009	Mansi Nivrutti Mangore
PT/ST3/0010	Vandana Pokhriyal
PT/ST3/0011	Kapil Kalra
PT/ST3/0013	Ramu Govindan
PT/ST3/0014	Kiran Monohar Kulkarni.
PT/ST3/0015	Nayakanti Bhasker Babu
PT/ST3/0016	M.Pravin Kumar
PT/ST3/0017	Harsh Parajiya
PT/ST3/0018	Vinithkumar R
PT/ST3/0020	Karhale Yuvraj Ramrao
PT/ST3/0021	Sandra K S
PT/ST3/0023	Patil Chandrajyoti Yuvraj
PT/ST3/0024	Kanchan Prem Bajaj
PT/ST3/0025	Shreya Vinayak Shetti
PT/ST3/0026	Sneha Shashikant Mali
PT/ST3/0027	Dhakane Tanuja Sunildatta
PT/ST3/0028	Singh Nadkar Narayan Singh
PT/ST3/0029	Vijay Prakash Sonar
PT/ST3/0030	Satya Obbalareddy
PT/ST3/0031	Pushpalata Purushottam Sherekar
PT/ST3/0032	Yuvarajan K
PT/ST3/0033	Esaiyarsan S
PT/ST3/0034	Abinesh M S
PT/ST3/0036	Sunnam Sravani
PT/ST3/0037	Sarita Singh
PT/ST3/0046	Anagha Kishor Godse
PT/ST3/0049	Tarush Pandey
PT/ST3/0053	Vraj Dave
PT/ST3/0054	Abhishek Kumar Dev
PT/ST3/0055	Gaurav Goyanar
PT/ST3/0056	Lovkesh Bhatia
PT/ST3/0057	S Amesha
PT/ST3/0058	Kothapalli Jayaprakash
PT/ST3/0061	Rathod Chandrakant Prabhu

PT/ST3/0062	Nishant B. Awandekar
PT/ST3/0065	Shreya M.U
PT/ST3/0066	Monisha I.N
PT/ST3/0067	Shashwath Ponnappa
PT/ST3/0068	Dipali Pandurang Shelke
PT/ST3/0069	Mohanish Uttamji Bhoyar
PT/ST3/0070	Priyanka P
PT/ST3/0071	Anish Kumar A
PT/ST3/0072	Siddhant R More
PT/ST3/0073	Vasanthraj S
PT/ST3/0074	Nupur Ajay Jaiswal
PT/ST3/0076	Praiseth Bellston R
PT/ST3/0077	Bhavyadharshini P
PT/ST3/0078	Dharshini R
PT/ST3/0079	Geofrey J
PT/ST3/0080	Priyanka Dwarampudi
PT/ST3/0081	Shanmugam R
STREAM 4: PHARMACOLOGY	
Poster ID	**Name of the presenter**
PT/ST4/002	Patil Prajwal Deepak
PT/ST4/004	W Clement Atlee
PT/ST4/006	Sudhir Sunil Patil
PT/ST4/009	Pavithra M
PT/ST4/0010	G Vedhanayagi
PT/ST4/0011	Priyadharshini G
PT/ST4/0012	Santhosh S
PT/ST4/0013	Jubilee R
PT/ST4/0014	V Poojitha
PT/ST4/0015	A Janani
PT/ST4/0016	Geetha T
PT/ST4/0017	Kripasha Jadav
PT/ST4/0021	K Sreedhara Ranganath Pai
PT/ST4/0023	Akshata Deepak Chavadi
PT/ST4/0025	Karishma Manohar Rathi
PT/ST4/0026	Snehal Vasant Satpute
PT/ST4/0027	Krushna Rajendra Abhale
PT/ST4/0028	Omkar Dattatray Janjire
PT/ST4/0029	Surabhi Sanjay Jarare
PT/ST4/0030	Jui Mandar Darbhe

PT/ST4/0031	Pawar Jaya Parmeshwar
PT/ST4/0032	Sonawane Sakshi Dnyaneshwar
PT/ST4/0033	Hase Pratiksha Pralhad
PT/ST4/0034	Ashwini Anand Tonape
PT/ST4/0035	Naisergi Jigneshkumar Shah
PT/ST4/0036	Bushra Naz Jhaniya
PT/ST4/0037	Kusu Susan Cyriac
PT/ST4/0038	Annasaheb Shivaji Kalange
PT/ST4/0039	Mary Manisha Mannam
PT/ST4/0040	Rupali Ambadas Kolekar
PT/ST4/0041	Madhe Sampada Ananda
PT/ST4/0042	Anusaya Ramesh Soundankar
PT/ST4/0043	Archana S
PT/ST4/0044	Srithar S
PT/ST4/0048	Niyaz Ahmed Sahabjad Choudhary
PT/ST4/0050	Sheba Dolly W
PT/ST4/0051	Rushikesh Ashok Jadhao
PT/ST4/0053	Anargha Jayaraj T
PT/ST4/0054	Arpan Kumar Tripathi
PT/ST4/0055	Saurabh Jagdish Durge
PT/ST4/0056	Preeti Singh
PT/ST4/0057	Charan C
PT/ST4/0061	Uddeshya Gupta
PT/ST4/0062	Anil S Savali
PT/ST4/0063	Nausheen Bachannagari
PT/ST4/0066	Vrushali Mohan Bhalchim
PT/ST4/0067	Sanjay
PT/ST4/0069	S K Shanmuga Priya.
PT/ST4/0071	Mayur Bhimrao Kale
PT/ST4/0073	Galla Pavan Bhargavi
PT/ST4/0074	Keerthana D
PT/ST4/0075	Hemalatha K R
PT/ST4/0076	Raj Amarlal Katariya
PT/ST4/0077	Apeksha Sanjay Tambe
PT/ST4/0078	Sakshi Shivshankar Nalkande
PT/ST4/0079	Dinesh Dilip Anandani
PT/ST4/0080	P.Puviyarasu
PT/ST4/0081	Megha Waman Manne
PT/ST4/0082	Dhanashree Tekade

PT/ST4/0083	Khushi M. Kongre
PT/ST4/0084	Aakash.R
PT/ST4/0085	Saloni Haridas Nagpure
PT/ST4/0086	Anil S Savali
PT/ST4/0087	Babiker Bashir Haroun Baraka
PT/ST4/0088	Pankaj Narayan Deshmukh
PT/ST4/0089	Sandipkumar Rahangdale
PT/ST4/0091	Anjani Kumari
PT/ST4/0094	Sayli Kulkarni
PT/ST4/0095	Meghna U Bairi
PT/ST4/0097	Pratiksha Vinay Nanepag
PT/ST4/0098	Kethupalli.Pravallika
PT/ST4/0099	K Rupa Devi
PT/ST4/00100	Kannikanti.Bhanu Teja
PT/ST4/00102	Ammu V V V Ravi Kiran
PT/ST4/00103	Mugdha Rajendra Bhutad
PT/ST4/00104	S K Syed Hussain
PT/ST4/00105	Karyampudi.Samuel Jonathan
PT/ST4/00106	Praful R. Gujarkar
PT/ST4/00107	Suja Rani D
PT/ST4/00108	Gauri Daf
PT/ST4/00110	Akshay Anil Deshmukh
PT/ST4/00111	Deepika H C
PT/ST4/00112	G S Rakshanaa
PT/ST4/00113	Arjun HR
PT/ST4/00114	Anil Pawar
PT/ST4/00115	Amol D. Patil
PT/ST4/00116	Kirthi Bhushan A
PT/ST4/00118	Phurbu Dolkar
PT/ST4/00120	Achal Anand Dingalwar
PT/ST4/00122	Heena Mahurkar
PT/ST4/00123	Arun S
PT/ST4/00124	Gokulnath M
PT/ST4/00125	Subash M
PT/ST4/00126	Narmadha N
PT/ST4/00127	A Abdul Azim
PT/ST4/00128	Dasari Mounika
PT/ST4/00129	Anup S Shende
PT/ST4/00130	Priti chincholkar

PT/ST4/00131	Akesh S
PT/ST4/00132	Hariprasad M G
PT/ST4/00133	C Aravind
PT/ST4/00134	S Dibenthran
PT/ST4/00135	Abhishek P R Nadig
STREAM 5: PHARMACY PRACTICE AND PHARMACY EDUCATION	
Poster ID	**Name of the presenter**
PT/ST5/001	Vaishakhi
PT/ST5/002	Parth Patel
PT/ST5/003	Rajesh Hadia
PT/ST5/004	Venisetty Raj Kumar
PT/ST5/006	Chethana H S
PT/ST5/009	Bhoomika M. Patel
PT/ST5/0011	Mohammed Shoaib
PT/ST5/0012	Talekar Tejas Ananda
PT/ST5/0014	Rohit O. Agarwal
PT/ST5/0015	Molmoori Raj Kumar
PT/ST5/0016	Challa Srinivas Reddy
PT/ST5/0017	Swaroop Krishna A
PT/ST5/0018	Neelima B John
PT/ST5/0020	Ananthesh L
PT/ST5/0021	Akila.M
PT/ST5/0023	Shankar Sk
PT/ST5/0025	Nandhitha Satheesan
PT/ST5/0026	Varshini Sathish
PT/ST5/0029	Lijo Thomas K J
PT/ST5/0030	Nisha Rajesh
PT/ST5/0032	Praveen R S
PT/ST5/0034	Anusree B.R
PT/ST5/0037	Deepthi M
PT/ST5/0039	Abdul Kadir
PT/ST5/0045	Chandana C
PT/ST5/0046	Shribhavana J
PT/ST5/0047	Mausam Patel
PT/ST5/0048	P Ranadheer Chowdary
PT/ST5/0049	Rakshith H T
PT/ST5/0050	S Lohita
PT/ST5/0051	Shibnath Kamila
PT/ST5/0052	Mahesh Elaya Bharathi C

PT/ST5/0053	Elavarasan.P.R
PT/ST5/0054	Nivetha M
PT/ST5/0055	Komal Kontam R
PT/ST5/0056	Asifsha D
PT/ST5/0057	Goshika R S
PT/ST5/0058	Kowsalya.M
PT/ST5/0059	Anisha Sara Anil
PT/ST5/0060	Aravindhan.S
PT/ST5/0061	Rajavadivel.S
PT/ST5/0062	Ashmi Sabana M
PT/ST5/0063	Mouliprabakaran S
PT/ST5/0064	Vinothini.M
PT/ST5/0065	Kingston Samraj Kirubakaran.J
PT/ST5/0067	Hariharasudhan.V
PT/ST5/0068	Nithesh Kumar H
PT/ST5/0069	Vinola Shrim Mishma S
PT/ST5/0070	Indu Tewari
PT/ST5/0071	Abinaya P
PT/ST5/0072	Venkatesaprasath R
PT/ST5/0073	Sonale.S
PT/ST5/0074	Vasanth Albert R
PT/ST5/0075	Shajin.J
PT/ST5/0076	Shankar Ganesh.M
PT/ST5/0077	Anandha Kumar.S
PT/ST5/0078	Anvil Preem Rebello
PT/ST5/0079	Jeevanandham.S
PT/ST5/0080	Keerthika S
PT/ST5/0081	Dhanush.T
PT/ST5/0082	Mohammed Ashfaq Hussain
PT/ST5/0085	Meenu Pandey
PT/ST5/0086	Seshadhri.S
PT/ST5/0087	Juveria Farhath
PT/ST5/0088	Manjunath Waggi
PT/ST5/0092	Brahmadi Shankar Reddy
PT/ST5/0095	S. Devika
PT/ST5/0096	Sujitha G S
PT/ST5/0097	Sabarieshwaran K
PT/ST5/0099	Sandhya A M
PT/ST5/00104	Nagarathna

PT/ST5/00105	Ashwini M
PT/ST5/00106	R Rajamurugan
PT/ST5/00107	Nithya R
PT/ST5/00108	Risha Snehal Monis
PT/ST5/00109	J Stephy Nivetha
PT/ST5/00111	Mohammed Abdul Farhan
PT/ST5/00112	Mir Mansoor Sultan
PT/ST5/00113	Rowshith D
PT/ST5/00114	Usha M
PT/ST5/00115	Ashwin Kumar A
PT/ST5/00117	Ashufta Fatima
PT/ST5/00118	Gulam Ansari
PT/ST5/00119	Kanaga K
PT/ST5/00120	Mohammad Ghaderi
PT/ST5/00121	Muhammed Jassim
PT/ST5/00122	Jerin Mathew. M
PT/ST5/00124	Krishna Mathiyarasan
PT/ST5/00127	Mohammed Salman
PT/ST5/00128	Pranay R Shettigar
PT/ST5/00129	Sriram G
PT/ST5/00133	Harsha R
PT/ST5/00134	Chandru. S
PT/ST5/00135	Falahuddharain R
PT/ST5/00136	Ragul Vigneshaa K
PT/ST5/00137	Shyla I
PT/ST5/00138	Dileep R
PT/ST5/00139	Surya R
PT/ST5/00140	M. Deepalakshmi
PT/ST5/00141	Roshin Roy
STREAM 6: REGULATORY AFFAIRS AND QUALITY ASSURANCE	
Poster ID	**Name of the presenter**
PT/ST6/001	Muddukrishna BS
PT/ST6/002	Muskan
PT/ST6/005	Ramya Ravi
PT/ST6/007	Sakshi Devhare
PT/ST6/008	Amaranath K R
PT/ST6/009	Manthan Patel
PT/ST6/0010	Dharini Patel
PT/ST6/0015	Manisha K
PT/ST6/0016	Reuben Nazareth
PT/ST6/0018	Lokananda

PT/ST6/0019	Bhoopathi S
PT/ST6/0020	Bhumika NM
PT/ST6/0021	Ranna G C
PT/ST6/0022	Roopashree G L
PT/ST6/0023	Mamta Shahu
PT/ST6/0024	Sanchita Vaidya
PT/ST6/0026	Sneha Bire
PT/ST6/0028	Komal Tated
PT/ST6/0029	Ashlesha Ravindra Lambat
PT/ST6/0032	Pranjali Kshirsagar
PT/ST6/0033	Kruthika R K
PT/ST6/0034	Dereddy Yella Yugandhar Reddy
PT/ST6/0036	Surjonarayan Motilal
PT/ST6/0037	Laxmi R Thakre
PT/ST6/0039	Pratheek V
PT/ST6/0040	Smitha H Seshadri
PT/ST6/0041	Pooja S
PT/ST6/0042	Mahesh K
PT/ST6/0043	G. Hemavathi
PT/ST6/0044	Varun M S
PT/ST6/0045	B J Tanmayi
PT/ST6/0046	Sneha H
PT/ST6/0047	Vaishalini D
PT/ST6/0048	Geethika Harikumar

PT/ST1/004

Graphene nanoribbon based targeted drug delivery system for the treatment of breast cancer

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Abstract: Here we report the use of graphene oxide nanoribbon (GONR) based formulation for the targeted delivery of anticancer drug for the treatment of breast cancer. Raloxifene hydrochloride (RLX), a Selective Estrogen Receptor Modulator (SERM) drug, possesses very low bioavailability and severe side effects. To ensure the complete and safe delivery of the drug to the breast tumour, GONRs are conjugated with transferrin (Trf) for the targeted delivery of the formulation. GONRs were synthesized by the longitudinal unzipping method and are characterized by UV, XRD, zeta potential, Raman spectroscopy, and TEM. Trf was covalently attached to the DSPE-PEG-COOH polymer and is characterized by its FTIR, NMR, and MALDI-TOF. The GONRs were modified by attaching protein-polymer conjugate (DPT) or polymer (without protein attachment (DP). The RLX loading to GDPT (GONR modified with DPT), and GDP (GONR modified with DP) was found to be very high due to the π-π interactions of hydrophobic RLX with the hydrophobic part of GONRs and DSPE. The amount of transferrin attached was examined by the BCA kit assay method. The biocompatibility and hemocompatibility of the modified and unmodified carrier have been checked on Vero cells by MTT assay and human RBCs, respectively. Invitro drug release studies at pH 4.5 and pH 7.4 for 72 hours showed release of RLX from the carrier is pH dependent and sustained. The cytotoxicity assessment of RLX, GDP-RLX, and GDPT-RLX was conducted on ER^+ MCF-7 cell lines. The IC_{50} values of RLX, GDP-RLX, and GDPT-RLX were 19.24 µM, 17.88 µM, and 20.34 µM for 24 hours, 8.08 µM,8.47 µM, and 6.49 µM for 48 hours, and 4.60 µM, 2.07 µM, and 1.19 µM for 72 hours respectively. As the time increases GDPT-RLX shows more cytotoxicity compared to RLX, and GDP-RLX.

Keywords: *Graphene oxide nanoribbons, Transferrin, Targeted drug delivery, protein-polymer conjugate*

PT/ST1/005

Investigating the dual role of excipients as a P-gp inhibitor and a stabiliser in the nanocrystal formulation of a poorly water-soluble drug candidate

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Abstract: Vortioxetine (VXT) is a well-known FDA-approved antidepressant drug that is used to treat major depressive disorder. However, its application is restricted due to its low water solubility. The permeation glycoprotein (P-gp) efflux pump is primarily responsible for the efflux of P-gp substrate drug candidates such as VXT, resulting in low bioavailability. The goal of this study was to improve the solubility and rate of bioavailability of VXT by developing a stable nanocrystal-based drug delivery system using TPGS as a potential stabiliser and P-gp inhibitor. Nanocrystal formulation was developed with antisolvent precipitation method having particle size, polydispersity index and zeta potential of 322.4 ± 1.8 nm, 0.67 and 0.725 mV respectively. Further, a comparative evaluation of lyophilization and untreated drug were confirmed. P-gp inhibition was confirmed by molecular docking technique using Schrodinger software. The formulations were compared in terms of size after re-dispersion (330 ± 4.8 and 408 ± 5.2 nm, respectively) and % drug release (~100 % and ~70 %, respectively in 50 min). The P-gp inhibition was checked by Schrodinger software (by Insilco method) and on the basis of highest docking score it has been selected for further process. The developed formulation as nanosuspension using TPGS as P-gp efflux pump inhibitor and stabilizer by antisolvent precipitation method was shown highest drug release as well as showing the great stability over longer period of time. The developed formulation usually exhibited excellent dissolving attributed to the potential of the TPGS solubility enhancer, stabilizer, and efflux inhibitor. The in-vitro P-gp efflux inhibition of the final formulation was then examined using cell lines.

Keywords: Vortioxetine, nanocrystals, formulation, bioavailability, Solubility, P-gp Inhibitor

PT/ST1/006

Shatdhauta ghrita: Act as a Promising Carrier in the development of creams

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Abstract: Ayurveda since ancient times, the science of health care and medicine has been regarded as extremely important. Ghrita is one among the chaturvidha sneha explained in Ayurveda and widely used as Ahara and Aoushada. Many ghrita samskara's are explained in classical texts of Ayurveda. Samskara is an Ayurvedic procedure that increases the potency and bioavailability of the drugs involved by inducing therapeutic properties. Shatadhauta ghrita (SDG) is an example of Dhouta samskara and one such unique preparation. SDG (shata -100 times, dhauta - washed) is made by washing cow ghee in water 100 times. This method turns ghee into a soft, cooling, nourishing, silky ointment. Shatadhauta ghrita is a popular Ayurvedic medication, but its application in modern therapy has received little attention. So, using that as base, researchers started out to investigate Shatdhauta ghrita's potential as a topical drug delivery agent. Shatadhauta Ghrita was prepared using Indian cow's ghee as per standard Ayurvedic classical texts and subjected to Organoleptic properties (color-white, odor- odorless taste- tasteless texture-Smooth oily and homogenous , weight-increased 50 gm to 75 gm), chemical properties (acid value-0.097±0.001, Iodine value-2.54±0.027, Saponification value-24.98±0.078, and Copper content- 1.19±0.0035 ppm, RM value-0.22±0.0057, P value-0.116±0.0088), physical properties (Moisture content-0.86±0.028, pH-5.86±0.033, Particle size-59.29±0.648, Viscosity (cp) at 20rpm for 30 seconds-9771±0.57, Type of emulsion-w/o) analyses as per the standard pharmacopeial procedures. In the future, it may be used as an alternative to modern topical ointment bases, and combining herbal drugs or phytoconstituents in the Shatdhauta ghrita may result in an effective herbal formulation.

Keyword: Shatadhauta Ghrita, Ayurveda, Cow ghee, Samskara, creams

PT/ST1/007

Block chain Technology in Pharmaceutical Industry

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Abstract: Drugs change ownership from manufacturers to wholesaler, distributer and then pharmacist before it reach to the customer. Block chain is a peer-peer transaction, that it can able to deal with one person with another person directly, without any intermediate agent. It is a shared immutable ledger that facilitates the process of recording transactions and tracking assets in a pharmaceutical business network. Block chain can ensure that it is reliable, accurate data, a single reliable version of truth is shared by every participant in the pharmaceutical manufacturing and supply chain. Thus, we can use crypto currency for transactions. Block chain can reduce labour charges, it can also used for storing transactions and only trusted parties will be allowed to join the network and push data to block chain. In this paper, we will discuss about the applications and role and features of block chain in pharmaceutical industry. The latest technologies like artificial intelligence and additive manufacturing help pharma companies accelerate the research and development process, create personalized products and conduct testing in innovative ways. Block chain could also increasingly support monetary transactions between patient and care centre,especially at the level of micropayments. It is a decentralized transaction so, it can use only by a limited people and access their rights and properties. Many old/traditional pharma industries are used very old methods for supply chain and transactions and preparation. By the technique of block chain, the new developing can eliminate the need for securing supply chain, counterfeit drugs, enhancing clinical research, validating returned drugs, boost research and development.

Keywords: Block chain, Pharma industry, Crypto currency, Clinical research.

PT/ST1/008

Synthesis And Characterization of Stavudine Loaded Mesoporous Silica Nanoparticles

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Abstract: Utilizing the Sol-gel process, Stavudine-loaded Mesoporous Silica Nanoparticles (MSN) were synthesized and characterized. MSN represent a promising controlled and targeted medication release method. MSNs are a significant advancement in the field of nanotechnology because of their distinctive biocompatibility property, large surface area that contributes to a large amount of drug loading, thermal stability and porosity. The surface characteristics and porosity of MSNs can change by varying the concentrations of additives used to prepare them. Stavudine (STV) loaded MSN were synthesized by using sol- gel method with different molar concentrations of Poloxamer 407, while the molar ratio of Hydrochloride, water and tetraethyl orthosilicate concentration was kept constant. Accordingly in this study, MSN were characterized by scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FT-IR), Particle size, N2 adsorption isotherms, X-ray diffraction (XRD) and Differential scanning electron microscopy (SEM). Release rate of STV from STV-MSN was found that 8.21% in 1hr to 78% in 10hr at different pH of media. Release of Stavudine from MSN (f5) was found to be sustained.

Keywords: *Stavudine, Mesoporous Silica Nanopartiicles, Antiretroviral, Sol-Gel Method, sustained release.*

PT/ST1/009

Formulation and evaluation of colon targeted matrix tablet of Ornidazole

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Abstract

Colon is being extensively investigated as a drug delivery site. Oral colon specific drug delivery system (CDDS) has been developed by means of combination of one or more controlled release mechanisms, hardly release drug in the upper part of the GI tract, but rapidly releases drug in the colon following oral administration CDDS is convenient for treating localized colonic diseases, i.e., ulcerative colitis, Crohn's disease and constipation etc., CDDS, also selectively deliver drug to the colon, but not to the upper GI tract. Colon is referred to as the optimal absorption site for protein and polypeptide after oral administration, because of the existence of relatively low proteolytic enzyme activities and quite long transit time in the colon. Ornidazole is used for the management of protozoal infections. The present study was conceived to formulation and evaluation of colon targeted matrix tablets in the management of colonic diseases like Crohn's disease and Inflammatory Bowel Disease using Locust bean gum, Inulin and Pectin as carriers in the treatment of Crohn's disease. All the formulations (F1 to F6) were evaluated for the physicochemical parameters and were subjected to in vitro drug release studies. The site of absorption of Ornidazole is in the whole GI tract and has long half-life 12hrs. The amount of Ornidazole release from tablets at different time intervals was estimated by UV Spectrophotometer. The result of the study showed that formulation F5 is most likely to provide targeting of Ornidazole for the local action in the colon and release 97.70% of Ornidazole. The most satisfactory formulation F5 was subjected to in vivo study Roentgenography using rabbit. The most satisfactory formulation F5 was stable during stability studies conducted for 60 days as per ICH guidelines. It showed no significant changes in the physicochemical parameters, in vitro release pattern.

Keywords: Ornidazole, CDDS, Ulcerative colitis, Crohn's disease, inflammatory bowel disease, Inulin, Pectin, Matrix tablet.

PT/ST1/011

Formulation and evaluation of colon targeted matrix tablet of Azathioprine

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Abstract: The aim of this study was to formulate and evaluate natural and synthetic polymer-based matrix tablets containing HPMC and xanthan gum, as well as their combinations respectively for colon targeted drug delivery."The matrix tablet was prepared by wet granulation technique". All tablets were found to be uniform in weight and drug content. The hardness and friability were both within acceptable limits. The DSC and FTIR study indicated that the drug is stable in the formulation and x-ray diffraction studies indicate that the drug was uniformly dispersed in an amorphous state in the polymer matrix. The in-vitro medication release investigation was carried out in gastric and intestinal fluids utilizing a dissolution rate test apparatus. Compare to other formulation (F1-F6) formulation F7 shows maximum amount of drug was released in the physiological environmental of stomach and small intestine within 5hours. Therefore, further optimized tablet F7 was chosen and it released small amount of drug was targeted to colonic region. The integrity and transit of the F7 tablet, which demonstrated good release in vitro, were examined in rabbit in vivo. The results in-vivo roentgenography showed that the prepared tablet was intact up to 11 hours and transit was clearly visible. Non-Fickian transport was used in the drug release mechanism.

Keywords: Matrix tablet: Azathioprine , xanthan gum, hydroxypropyl methylcellulose K4M, wet granulation method .

PT/ST1/0012

Formulation and Evaluation of Cyclosporin loaded Cubosomes for the management of psoriasis

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Abstract: Psoriasis occurs in 2% of patients worldwide but in recent years the number of patients suffering from psoriasis has increased and there is no cure and has high impact on patient's quality of life. The conventional psoriasis therapies may not affect completely. According to national health portal of India around 80-90% of peoples are suffering from plaque psoriasis. In this study, we developed a Cyclosporine loaded cubosomes, which helps in controlled delivery of the drugs to target site and carrying large molecular weight drugs. The cubosomes was prepared by Fragmentation method using Glyceryl monooleate and Polaxomer 407. The prepared cubosomes loaded with CYS were characterized using particle size, Poly dispersity index, Zetapotential, the entrapment efficiency shows above 96% and the Invitro studies at pH 7.4 and pH 5.5 up to 72h showed controlled release of drug from the carrier. The surface morphology of prepared cubosomes were characterized using cryo-TEM, AFM, SAXS-D. The cytotoxicity assessment of the prepared cubosomes was done in HaCaT cell lines by MTT assay. The IC 50 value of the pure CYS and cubosomes loaded CYS was found to be 30 µM and 28 µM at 24h, 25 and 20µM at 48h, 10 and 8 µM at 72h, respectively.

Key words: Psoriasis, Cubosomes, Cyclosporine.

PT/ST1/0014

Formulation and Development of Curcumin and Ascorbic acid Nutraceuticals Granules Sachet as a preventive measure for COVID 19

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Abstract: The object of investigation was to formulate and evaluate effervescent granules of Curcumin (CUR) and Ascorbic acid (AA). 13 Formulas were prepared by applying 32 factorial designs. Here Complex of Hydroxypropyl -β- Cyclodextrin and CUR was prepared by lyophilization technique to Improve the solubility of CUR. The results of evaluation parameters of granules shows that granules have excellent flow property with appropriate bulk density and tapped density for the uniting dose. A rapid, simple, accurate, economical UV-spectrophotometric method has been developed in that for the measurement of AA 422.0 nm and for the quantification of CUR 261.0 nm was employed. Reverse phase high performance liquid chromatographic method has been developed by using Hypersil BDS C 18, 5µ column having 250 x 4.6 mm internal diameter in isocratic mode with mobile phase containing Buffer and acetonitrile (50:50 v/v) was used. The retention time obtained for CUR and AA was 8.15 and 2.52 minutes respectively. Both methods were validated according to ICH validation Parameters. Accuracy in terms of recovery of CUR and AA from granule was found to be above 98 % specify that CUR and AA can be quantified from granule dosage form without interference from the excipients.

Keywords: Curcumin, Effervescence, Factorial Design

PT/ST1/0015

FORMULATION AND EVALUATION OF CETIRIZINE HYDROCHLORIDE *IN-SITU* OCULAR GEL

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Abstract: In the present research work, the aim was to prepare pH trigged and temperature trigged in-situ ocular gel of Cetirizine Hydrochloride (CTZ) to improve its local bioavailability at eye surface. In-situ ocular gel was prepared by pH-sensitive gelling agent and temperature trigged with a one viscosity builder polymer. The amounts of polymers were selected on the basis of optimum quantity required for sustained release of drug from preparation and as reported in literature and performed ranging study. Carbomer 407P and HPMC E4M polymer were used to prepare pH trigged in-situ ocular gel. Poloxamer 407 and HPMC E50 were used to prepare temperature trigged in-situ ocular gel. All formulation was evaluated for Appearance, pH, viscosity at different pH, gelling capacity, % drug content and release study. Nine formulations for each approach were prepared and optimized successfully using 32 factorial designs. Optimization was done by DoE software version Version 13.0.10.064. CTZ was successfully formulated in pH triggered and temperature trigged in-situ gelling system using Carbomer 974P in combination with HPMC E4M and Poloxamer 407 and HPMC K50, respectively. It was seen that HPMC is important for in-situ gel behaviour along with Carbomer 974P/ Poloxamer 407 on the basis of main effect of concentration of HPMC and Carbomer 974P/Poloxamer 407. In-vitro results indicated that the in-situ gel system is a viable alternative to conventional ocular drops by virtue of its ability to sustain drug release.

Keywords: Carbomer, HPMC, pH trigged in-situ ocular gel, temperature trigged in-situ ocular gel and bioavailability.

PT/ST1/0020

Quality by Design (QbD) based Development and Evaluation of Solid Lipid Nanoparticles of Felodipine Using Central Composite Design

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Abstract: The poorly soluble felodipine was successfully encapsulated in Glyceryl Mono and Diglyceride (GMDG) based solid lipid nanoparticles (SLN) using QbD based approach by emulsification-high pressure homogenization method to enhance the bioavailability. A central composite design (CCD) was applied to assess the effect of critical process parameters and critical material attributes on various responses such as particle size, polydispersity index, entrapment efficiency. Optimization of SLN nanoformulation was performed by 23 central composite design. The prepared SLN was further lyophilized to obtain dry nanoformulation. Fourier transform infrared spectroscopy (FTIR) was performed and found to be the lack of drug- excipient interaction. Crystallinity index was studied by DSC and PXRD and inferred to that the drug was converted from crystalline in to amorphous. Study of surface morphology shows that the round shaper of the particle. The in vitro drug dissolution studies of optimized formulation and reference formulation at pH 1.2, 0.1 N and pH 6.8 showed slow release and found that drug was released in sustained manner up to 24 h. The release pattern was followed the Higuchi matrix release kinetics was followed. In vivo study was performed and found to be the enhanced bioavailability 2.6 fold using new drug delivery carriers. Thus, the safe and promising novel drug delivery system was developed to enhanced bioavailability and safety.

Keywords: Solid lipid nanoparticles (SLN), Felodipine, Central composite design (CCD), bioavailability

PT/ST1/0021

Solubility Enhancement of Rifabutin by Cosolvency Approach

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Abstract: Rifabutin is wide spectrum antimicrobial agent, effective in the treatment of infection caused by M. tuberculosis, M. avium and M. Leprae and also used in the treatment of multidrug resistant TB. Rifabutin is very poorly water soluble drug (0.19mg/ml) with high permeability. For enhancement of solubility of a hydrophobic drug has a significant role in the development of a liquid dosages form. The purpose of this study was to improve the solubility of Rifabutin by co solvency method. Different blends were prepared by usinf different solvents and surfactants in different proportions have been used to enhance the solubility of Rifabutin like water, phosphate buffer, ethanol, propylene glycol and PEG 400, Tween 80 and Brij 35. In this it was found that the blend 90% PEG and 10% co solvents (ethanol and propylene glycol) give highest solubility and among the surfactant systems, Tween 80 had shown enhanced solubility of Rifabutin. Solubility of rifabutin was determined rifabutin in pure solvents and in mixture of co solvents. It observed that the blend of 90% PEG and 10% ethanol and propylene glycol had shown the better improvement of solubility when compared with the other solvents and co solvents as it caused a noteworthy enhancement in solubility of Rifabutin that was 1.6803 mg/ml. The above observations lead that the addition of small amount of polar solvent enhances the solubility of drug. Thus, the study generated an important array of data to compare the effect of these co solvents on the aqueous solubility of rifabutin.

Keywords: Co solvency, rifabutin, solubility enhancement, surfactants.

PT/ST1/0023

Design, Optimization and Evaluation of Dorzolamide HCl loaded Solid lipid nanoparticles (SLNs) for Ocular Administration

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Abstract: Glaucoma is a progressive optic neuropathy that results in permanent eye vision loss. Dorzolamide HCl is an acetazolamide derivative used for the management of glaucoma. The present work is carried out with the objective of optimization and developing SLNs containing Dorzolamide HCl as an ophthalmic drug delivery system for the management of glaucoma. The SLNs of Dorzolamide HCl were formulated by solvent evaporation followed by the ultrasonication method. To optimize the SLNs, Design of Experiment (DoE) software was used by applying 32 full factorial design for optimizing the formulations. The optimized SLNs were evaluated for zeta potential, TEM study, drug release study, sterility test, isotonicity test, in vitro ocular irritancy, and ex vivo histopathology studies. The optimized SLNs of Dorzolamide HCl had a particle size of 164.3 nm and entrapment efficiency of 74.6%. TEM study revealed the smooth surface of spherical particles with nano-scale size. The formulation sustained the drug release maximum of 68.38% up to 10 hrs. HET-CAM test results revealed that the formulation didn't show any signs of irritation on chick embryos and hence was found to be non-toxic. From the results obtained with the current study, it was concluded that Dorzolamide HCl- SLNs can be a better novel drug delivery approach for glaucoma therapy.

Key words: *Glaucoma, SLNs, Dorzolamide HCl, HET- CAM test.*

PT/ST1/0024

Formulation and development of carboplatin-loaded RBCs Coated Liposomes for the treatment of breast cancer

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Abstract: Liposomal drug delivery system has become an important drug delivery tool due to their unique characteristics such as non-toxic, biocompatible, low systemic toxicity and targeted drug delivery. In the current study, a RBC coated nanoliposomal drug delivery system was developed to deliver carboplatin to target breast cancer cell lines. RBC coated nanoliposomal drug delivery system of carboplatin- was formulated using phospholipids and cholesterol by thin-film hydration method and were optimized using 3^2 full factorial designs. Formulations were then analyzed for particle size, zeta potential, entrapment efficiency, Transmission electron microscopy (TEM), Differential scanning calorimetry (DSC), protein content, *in-vitro* drug release, *in-vitro* cell line studies and stability testing. The optimized formulation showed particle size of 105.6 nm with Zeta potential values indicating its stability. Entrapment efficiency was found to be 50.1%. *In vitro* studies revealed that RBC coated liposomal formulation showed a prolonged drug release compared to the pure drug for duration of 8 h. The RBC coated liposomal formulations were also evaluated in breast cancer cell lines for their cytotoxicity. The study revealed that RBC coated liposomal formulation successfully released the drug directly into the target cell enabled triggering cells death.

Keywords: *Breast cancer, Carboplatin, Liposomes, Erythrocytes, MDA-MB468*

PT/ST1/0025

Development of Asiatic acid-loaded Nanoemulgel for Improved Efficacy in Wound Healing

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Abstract: Wounds are physical injuries resulting in tearing or breaking of skin, and their refurbishment involves a complicated chain of events which takes time to heal completely. Wounds, if left unresolved, lead to microbial contamination, increase the severity and turn fatal, resulting in gangrene. Asiatic acid (ASA), a triterpenoid, is an effective anti-inflammatory and assists in wound healing. Thus, the present study aimed to develop and evaluate the Asiatic acid-loaded nanoemulgel (ASA-NEG) for improved therapeutic effectiveness in wound management. The ASA-NEG was developed using the Ultrasonication (US) technique and optimized by Central composite design (CCD). ASA was incorporated into the optimized nanoemulsion and was transformed to nanoemulgel using 1 % carbopol to give Asiatic acid-loaded Nanoemulgel (ASA-NEG). The optimization predicted that a 15 % organic phase at 24 % amplitude for 6 mins of US would yield a nanoemulsion with a globule size (GS) of 143.667 nm and a PDI of 0.295. The -ASA-NEG exhibited appreciable stability concerning GS and Polydispersibility Index (PDI) when stored at 5 ^{0}C and 25 ^{0}C for 28 days. The morphological characterization by SEM indicated the spherical shape of the oil globules dispersed in the nanoemulgel base. Additionally, the ASA-NEG exhibited appreciable *ex-vivo* permeability. The *in-vivo* wound healing assessments displayed that the formulated ASA-NEG showed a greater % wound contraction rate than the marketed gel. Thus, ASA-NEG has a potential application and can be developed as a viable product for wound management.

Keywords: *Asiatic acid, wound healing, Nanoemulgel, Ultrasonication, Centre composite design*

PT/ST1/0026

Studies on Effect of Aloevera Gel on the Release Profile of Diclofenac Potassium from Different Formulations

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Abstract: A sustained release formulation is one which delivers the drug slowly and continuously for an extended period of time. Diclofenac Potassium is a non-steroidal anti-inflammatory agent with short half-life and undergoes first pass metabolism with a bioavailability of 50%, hence suitable for developing sustained release formulation. From the review of literature, it was found that aloevera gel powder is a potential drug release retardant. The aim of this research work was to formulate an optimized sustained release tablet of Diclofenac Potassium using aloeveragel powder as the release retardant. The formulations were designed as suggested by the design expert software using aloevera gel powder & hydroxyl propyl methyl cellulose as the release retardants along with other excipients by direct compression method.The formulated tablets were of uniform weight and drug content.The pharmaceutical properties of all formulations and their *invitro* drug release were evaluated. The optimized formulation, F13 showed a drug release of 95.3% at the end of 12 hours & followed first order kinetics with non fickian release pattern. From the drug release profile it was observed that aloevera gel powder had a retardant effect. Hence it can be concluded that aloevera gel powder is a potential and economical drug release retardant for the development of sustained release dosage form.

Keywords: *Aloevera gel powder, Diclofenac potassium, sustained release tablet*

PT/ST1/0027

DESIGN AND EVALUATION OF BUCCAL PASTE CONTAINING *Melampodium divaricatum* AGAINST MOUTH ULCER

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Abstract: Buccal formulations is a medicine given between the gum and the inner lining of the mouth cheek. Buccal paste are the medication used for the relief of symptoms of mouth ulcer. *Melampodium* extract usually used to govern several diseases such as dental carries, malaria and posses antileishmanial, antibacterial, anti-inflammatory and antinociceptive activity. *Melampodium* comprises some essential phytoconstituents such as sesquiterpenes, E-caryophyllenes, Germacrene. The plant extract was characterized by maceration process. The present research has been undertaken with the aim to formulate and evaluate the buccal paste containing aqueous extract of flower buds of *Melampodium divaricatum* for anti-inflammatory activity against mouth ulcer. Paste formulation was designed using accurately weighed amount of drug extract along with other additives such as sodium CMC, starch, methyl paraben, propyl paraben, white soft paraffin etc. Formulations were evaluated for following parameters such as p^H, spreadability, homogeneity, viscosity, extrudability, anti – inflammatory activity and in-vitro drug release. The formulation were finalized through optimization by central composite design. The result showed that the optimized herbal oral formulation containing *Melampodium divaricatum* extract shows that all physicochemical parameters were found to be compactable with the normal range. Anti-inflammatory study of formulation revealed excellent efficacy against mouth ulcer. Herbal buccal paste was formulated which was stable and effective for the treatment of mouth ulcer.

Keywords: *Melampodium divaricatum, buccal paste, mouth ulcer*

PT/ST1/0028

Design & Characterization of PEGylated Nifedipine Loaded Liposphere For Enhanced Bioavailability

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Abstract: Lipospheres are novel drug delivery systems in which drug is dispersed or dissolved in lipidic core, which is encapsulated by a emulsifier layer. Particle size of such lipid particles ranges between 0.2-100 micrometer. Nifedipine (NI) is a high potent calcium channel blocker, used to treat high blood pressure & angina, is poorly soluble and undergo extensive first pass metabolism, which cause poor bioavailability (50%). The aim of the research work is to develop the optimized formulation of PEGylated Nifedipine liposphere showing enhanced bioavailability and giving a sustained release of drug. Nifedipine liposphere were prepared by melt dispersion techniques using stearic acid, and paraffin wax as lipid matrix containing increasing concentrations of PEG (Poly Ethylene Glycol) 4000 (10,25, and 40%). The obtained liposphere were characterized for entrapment efficiency, particle size, and *invitro* drug release. Evaluation studies proved that shape and size of liposphere complies with the specification of liposphere. The result also indicated that liposphere with 10%w/w PEG 4000 had higher encapsulation efficiency. *Invitro* release studies demonstrated that all the formulation were extended release form. The kinetic release pattern was found to be non-Fickian. This study proved that the problem of Nifidipine stability & poor absorption might be corrected by tactical engineering of lipid drug delivery systems such as lipospheres.

Keywords: *Nifedipine, Liposphere, PEG*

PT/ST1/0029

DESIGN AND EVALUATION OF DIACEREIN PRONIOSOMAL GEL FOR ENHANCED TOPICAL DELIVERY

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Abstract: Proniosome are microscopic lamellar structure, they combine a non-ionic surfactant and cholesterol followed by hydration in aqueous media. Diacerein is a non steroidal anti inflammatory drug with short half- life 4hr and undergo first pass metabolism such that only 35-56% of administered dose reaches systemically. The main aim of the study is to develop and statistically optimize the proniosomal gel for enhanced transdermal delivery and improve the bioavailability using Central composite design and investigate the influence of both non-ionic surfactant and cholesterol to maximize the entrapment efficiency and drug release. Diacerein loaded proniosomal gel was prepared by coacervation phase separation method using span 60, cholesterol and other excipients. The result showed that entrapment efficiency is highest with the formulation F_1 which may have an optimum surfactant, cholesterol ratio (6:1). The *invitro* release studies revealed that most of the formulation found to provide approximately 90% release with in a period of 12hr. The formulation F1 was found to sustain the release than other formulation. This study reports that the issue of Diacerein poor absorption could be corrected by the proniosomal gel formulation. The concentration of cholesterol and the non-ionic surfactant have greater importance in the drug entrapment efficiency and drug release.

Keywords: *Diacerein , proniosomal gel , span 60 , cholesterol*

PT/ST1/0030

PRONIOSOMAL GEL OF ECONAZOLE NITRATE FOR ANTIFUNGAL THERAPY

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Abstract: Applications of topical drug delivery system is gaining momentum owing to its adaptability and widespread usability. Feasibility of proniosomal gel of econazole nitrate for topical drug delivery is not widely explored. The present study aims at design and optimization of proniosomal gel formulation of econazole nitrate on enhanced topical delivery for antifungal therapy. Econazole nitrate serves as a broad-spectrum imidazole antifungal agent used for superficial fungal infections. Econazole belongs to the BCS class II with a half-life of 4hours. Econazole nitrate proniosomes were formulated by coacervation phase separation method consisting of span 60, cholesterol and other ingredients. The formulated proniosomes were incorporated with Carbopol gel to form proniosomal gel. The optimization based on central composite design assessed the effect of varying ratios of span 60 and cholesterol on entrapment efficiency and in vitro drug release as responses. Evaluation of the optimized formulations indicated a prolonged drug release of 12hours with a higher entrapment efficiency of 91.43% by formulation F3 at span 60 to cholesterol ratio of 7:1. With sustained drug release and higher entrapment efficiency, proniosomal gel of econazole nitrate could be considered as a suitable candidate for enhanced skin permeation serving improved patient compliance and better therapeutic uses. The present study concludes the feasibility of econazole based proniosomal gel for antifungal therapy.

Keywords: *Econazole, Proniosomal gel, Span 60, Antifungal-therapy*

PT/ST1/0031

Effect of Process Variables on the Development and Characterization of Nanocellulose as a Novel Biopolymer

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Abstract: Nanocellulose is one of the versatile "**green**" platforms for various fields like industry, medical, pharmacy, and many more. Because of its excellent mechanical, physical, and biological properties, nanocellulose can be easily opted for. The present work is focused on developing nanocellulose from various commercial sources by the acid hydrolysis method. The preparation of nanocellulose is dependent on two factors: the concentration of sulphuric acid and the variation in temperature. The prepared NC were characterized for their size, zeta potential, TEM, XRD, and FT-IR. The size of the NC was found to be in the range of 134–644 nm. The Zeta potential of AHNC was found to be between -40.6 and-37.4 respectively. The XRD diffractograms show the crystallinity index in the range of 55–66%. TEM shows that the prepared nanocellulose is semi-crystalline. FT-IR shows a peak at 1177 cm^{-1} due to the O-H association bond of nanocellulose, which is similar to the peak of cellulose. Thus obtained nanocellulose can be used as superdisintegrant, copolymer in the preparation of hydrogels, transdermal films, food packing materials, drug delivery, and aerogels. Nanocellulose facilitates in the controlled and sustained release of the drug.

Keywords: *nanocellulose, acid hydrolysis, cellulose, nanocrystals, nanofibrils*

PT/ST1/0033

Enhancement of Solubility and In-Vitro Dissolution Study of Statin Through Inclusion Complex with Bioenhancer

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Abstract: Due to low solubility and bioavailability of atorvastatin calcium is confronted with challenges in conceiving appropriate formulation. In the present study, the solubility and dissolution rate of atorvastatin calcium was improved via a solid dispersion approach with the inclusion of quercetin as a bioenhancer from the natural source. Solid dispersion of Atorvastatin calcium with quercetin was prepared through a co-precipitation method by using PVP-K30 as an assisted polymer in a different ratio. This formulation was studied for solubility and drug dissolution rate. The interaction study was carried out by using Fourier transform infrared spectroscopy and differential scanning calorimetry. The study shows that the dissolution rate of atorvastatin calcium was significantly improved when formulated in solid dispersion as compared to the physical mixture and pure drugs. Moreover, all these studies suggested improved dissolution of Atorvastatin calcium from a modified novel drug bio-enhancers solid dispersion. In conclusion, quercetin can be effectively complex with atorvastatin without interaction and this formulation can be further investigated for pharmacokinetics properties for better pharmacological results.

Keywords: *Hyperlipidemia, Atorvastatin, Quarcetine, Bioenhacers, PVP-K30*

PT/ST1/0034

ROLE OF SURFACTANT ON TRANSDERMAL PRONIOSOMAL GEL

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Abstract: The Transdermal Proniosomal Gel for Enalapril maleate was prepared for the treatment of hypertension that is capable of efficiently delivering entrapped drug over an extended period of time. The physical mixture of Drug, lecithin, and cholesterol were subjected to compatibility study using *FTIR absorption spectra.* The fabricated transdermal proniosomal gels were evaluated for various parameters like, Determination of pH and viscosity, Vesicle size analysis, Rate of spontaneity, Encapsulation efficiency, *In vitro* skin permeation studies, Skin irritation test, and Stability studies. The *in vitro* skin permeation studies showed the cumulative permeation of 78.53±0.25%, 85.24±0.25%, 73.37±0.25%, and 82.58± 0.25% through the skin in 24 hours for the formulations GF_1, GF_2, GF_3, and GF_4 respectively. All the formulations from GF_1 to GF_4 showed zero order drug permeation with diffusion, non-fickian release as the possible mechanisms of drug release.

Keywords: *Transdermal gel, Proniosome, Lecithin, Cholesterol, Permeation studies, Surfactant.*

PT/ST1/0035

Formulation and Development of Curcumin and Ascorbic acid Nutraceuticals Granules Sachet as a preventive measure for COVID 19

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Abstract: The object of investigation was to formulate and evaluate effervescent granules of Curcumin (CUR) and Ascorbic acid (AA). 13 Formulas were prepared by applying 3^2 factorial designs. Here Complex of Hydroxypropyl -β- Cyclodextrin and CUR was prepared by lyophilization technique to Improve the solubility of CUR. The results of evaluation parameters of granules shows that granules have excellent flow property with appropriate bulk density and tapped density for the uniting dose. A rapid, simple, accurate, economical UV-spectrophotometric method has been developed in that for the measurement of AA 422.0 nm and for the quantification of CUR 261.0 nm was employed. Reverse phase high performance liquid chromatographic method has been developed by using Hypersil BDS C 18, 5µ column having 250 x 4.6 mm internal diameter in isocratic mode with mobile phase containing Buffer and acetonitrile (50:50 v/v) was used. The retention time obtained for CUR and AA was 8.15 and 2.52 minutes respectively. Both methods were validated according to ICH validation Parameters. Accuracy in terms of recovery of CUR and AA from granule was found to be above 98 % specify that CUR and AA can be quantified from granule dosage form without interference from the excipients.

Keywords: *Curcumin, Effervescence, Factorial Design*

PT/ST1/0036

FORMULATION AND EVALUATION OF NOVEL BATH FIZZER

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Abstract: The primary goal of the research study was to formulate novel bath fizzers from natural ingredients such as neem extract and ginger oil. bath fizzers are used to improve cleaning and serve as a vehicle for cosmetics. Beyond physical health, cosmetics can help to change our mood, and increase our appearance. We prepared the methods in total 4 steps in the step 1 we prepared the neem extract is done by using steam distillation. In the step 2 we prepared the ginger oil, is done by the process use of Clevenger apparatus for extraction of oil. In the step 3 we prepared wet mixture. In the step 4 we prepared the final fizzers , with the help of step no. 1,2,3.

We performed 3 trial to get desired result. In first trial we use more amount of sodium bicarbonate and less amount of citric acid.as a result water become more basic and obtained pH not expected. So, we performed second trial in this we use the equal quantity of sodium bicarbonate and citric acid and water become neutral and we get expected pH.

To conclude that we prepared bath fizzer is used in Winter, Summer & Monsoon with specific benefits like, antibacterial effect, cooling effect, moisturizing effect & anti-inflammatory effect. Based on the present work the novel bath fizzer formulation have significant results without any side effect.

Key words: *Bath fizzer , SLSA , a natural substance , natural ingredient*

PT/ST1/0037

Formulation and Evaluation of Kiwi Peel Extract as a Cosmeceutical agent

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Abstract: Phytoconstituents and medicinal plants have been used traditionally as cosmetics for ages. This study aims to perform the formulation and evaluation of *Actinidia deliciosa (AD)* fruit peel as a cosmeceutical agent. The AD peel was extracted using solvents methanol and hydromethanol (1:1) by two techniques- maceration and ultrasonication. The extracts were evaluated for a phytoconstituent profile by wet test, total phenolic content, total flavonoid content and HPTLC bioautography studies. 5% and 10% formulations of methanolic kiwi peel extract were prepared using polymer carbopol 934 and evaluated for physical appearance, pH, viscosity, spreadability, drug diffusion, and drug content. The AD peel methanolic extract obtained by maceration was found to be most rich in phytoconstituent profile. The 10% formulation using AD peel methanolic extract showed optimum physical appearance, pH, viscosity, spreadability, and *in-vitro* drug diffusion profile with good anti-bacterial activity against both *S.epidermidis* (18.65±0.024 mm) and *S. aureus*(17.43±0.0078 mm), more than the standard marketed formulation. The HPTLC separation of the active extract was performed using *toluene*: ethylacetate:acetic acid (7.2:2.2:0.5, v/v/v) as mobile phase and 10 cm × 10 cm on HPTLC Silica gel 60 F254 as stationary phase. Ten well-resolved peaks were obtained and clear white zones were observed at Rf 0.12, 0.41, 0.65, and 0.12, 0.14, 0.41, 0.65 for *S. aureus* and *S. epidermidis* respectively indicating the active phytoconstituents. The developed *AD* peel extract gel formulation showed good antioxidant and antimicrobial activities against acne-causing microorganism *S. epidermidis* and *S. aureus* and hence may be a promising candidate for skin care products.

Keywords: *Actinidia deliciosa, kiwi, peel, acne, cosmetics, anti-oxidant, bioautography*

PT/ST1/0038

FORMULATION OPTIMIZATION AND EVALUATION OF RANOLAZINE FAST DISSOLVING TABLETS USING VARIOUS SUPER D

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Abstract: The conventional oral route still remains the most widely used route of drug administration especially tablets and capsules. Tablets are the one which has wide range of advantage which includes release modifications, coatings and multiple layers can be made on it. The dissolution rate of tablets can be altered with various mechanism one such method is use of super-disintegrate and developing a fast-dissolving tablet. The fast-dissolving tablets are those which disintegrate within 3min.The FDT are most useful for Patients like Pediatric, Geriatric, Dysphasia and those who are frequent travelers. The objective of this research work was envisaged to understand the use of various super disintergrants and their effect in formulation of Ranolazine Fast Dissolving Tablets (FDT). The fast-dissolving tablets were formulated by direct compression method using various disintergrants like Sodium starch glycolate, Croscaramellose sodium and Crospovidone. The effect of different super disintegrants at different concentration was studied with help of various studies such as Hausner's ratio, Compressibility index, Differential scanning colorimetry (DSC), Friability, Disintegration and Dissolution studies etc. As a result, the most effective super disintegrants and its effective concentration was found as Crospovidone at 15mg/tab. It has a disintegration time of 25 sec, cumulative drug release of 99.77±0.41. From the results it is Concludedthat Crospovidone was more effective compared to other superintegrants used", hence it is recommended to use Crospovidone as Superdisintergrant in FDT formulations.

Keyword : *Ranolazine,Fast Dissolving Tablet,Lag time, Super disintegrant*

PT/ST1/0039

INVITRO AND INVIVO EVALUATION OF ANTI ULCER ACTIVITY FOR A NOVEL CURCUMIN LIPOSOMES BIOENHANCED WITH PIPERINE.

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Abstract: The principle aim of this investigation is to formulate novel curcumin-piperine liposomes and evaluate its potential in terms of in vitro study and invivo anti-ulcer study in wistar albino rats. Liposomes, also known as lipid vesicles which are capable of delivering the drug at site specifically and also enhance drugs bioavailability. Curcumin is an excellent Anti ulcer and anti inflammatory agent.Bioenhanced are the agents which are capable of enhancing the drugs bioavailability upto 10-30% when administered concominantly with drugs. The objective of the study is to formulate and prepare curcumin-piperine liposomes. Preformulation studies was carried out initially to optimize drug and excipients. Curcumin Liposomes,curcumin Piperine Liposomes and blank where prepared by solvent evaporation techniques.Then the optimization is done to find optimal range of variables to enhance the encapsulation efficiency and stability. The result of in-vitro curcumin release data of the optimized curcumin-piperine liposomal formulation was fitted into various kinetic equations. The release pattern of curcumin from liposome formulation followed First–order kinetics (R2 = 0.9996) with some fitting to Higuchi's kinetics (R2 = 0.9938) and Korsmeyer-Peppas kinetics (R2 = 0.9938),The Invivo study also showed significant changes in ulcer. It is clear that curcumin Piperine Liposomes have better therapeutic efficacy than individual curcumin liposomes due to the bioenhancer-Piperine. Absorption of curcumin has been increased significantly and due to Liposomal formulation nature the better bioavailability is acheived which shows better anti ulcer activity.Hence Bioenhancer curcumin drug delivery need to be further studied in Humans.

***Key words**: curcumin, Bioenhancer, Liposomes, Ulcer, PharmacoKinetic parameters.*

PT/ST1/0040

Formulation development and evaluation of Indian propolis tablets for its nutraceutical potential

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Abstract: Propolis, a natural product obtained from apiculture is complex resinous material produced by honey bees from plant exudates, bees wax and bee secretions. Antioxidant and nutraceutical potential of propolis, gives wide applications in nutraceuticals and food industry. Despite of its tremendous nutraceutical potential propolis has several limitations in terms of solubility, palatability etc. which hampers its bioavailability and overall efficacy. The aim of the present study was to develop and evaluate suitable dosage form of Indian propolis to improve its nutraceutical activity. Crude propolis was extracted with novel extraction technique to obtain polyphenols and flavonoid enriched extract and evaluated for nutraceutical parameters. Propolis granules were formulated with wet granulation method. Granules were evaluated for various evaluation parameters to ensure desired flow ability and compressibility etc. Zinc and vitamin C was added as Immunity booster and anti oxidant respectively. Tablets were formulated and evaluated for various characterization methods. Preliminary phytochemical investigations of the propolis extract was carried out and results revealed presence of alkaloids, flavonoids, tannins & phenolic compounds in desired level. Formulated tablets of Indian propolis were subjected to various evaluation parameters. Results obtained shows desired tablet characteristic of developed dosage form in terms of drug content, hardness, thickness, friability, disintegration time, *in vitro* drug release etc. Developed dosage form may gives better palatability, enhanced efficacy of propolis with improved biopharmaceutical properties. This study can be further extended for pharmacological & biopharmaceutical evaluation of developed formulation for further clinical trials.

Keywords: *Indian propolis, Natural product, Nutraceuticals*

PT/ST1/0041

Phytosomal Nano-Emulsion of *Couroupita Guianensis* for Management of Diabetes Mellitus

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Abstract: Diabetes mellitus preponderance is rising rapidly at a global level. The conventional medicines have more side effects than herbal drugs therefore more attention is shifting towards herbal drugs. Since herbal drugs are less bioavailable due to their polar nature, a strategy of using phospholipid to prepare phytosomes was successfully used in this research work. Leaves of *Couroupita guianensis* were extracted. Percentage yield of extract was found to be 3.2. The extract was then formulated into phytosome using soya lecithin as phospholipid. The phytosomes were subjected to further size reduction to form nanophytosomes. The nanophytosomal and phytosomal formulation was analyzed for particle size, entrapment efficiency, zeta potential, *in vitro* dissolution studies. Thus, it is concluded that *Couroupita guianensis* phytosomes have better bioavailability than that of the extract.

Keywords: *Couroupita guianensis*, phytosome, nanophytosomes, particle size, bioavailability, entrapment efficiency

PT/ST1/0042

Formulation Development and Evaluation of Indian Propolis Hydrogel for its wound healing potential

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Abstract: Propolis, obtained from apiculture industry is a natural product which is well proven for wide variety of its chemical constituents. Literature studies reported antimicrobial, antibacterial and antifungal potential which further gives excellent wound healing properties to propolis. Despite of its antimicrobial, antibacterial potential, propolis has several limitations in terms of solubility, lipophilicity, staining, stickiness etc. which hampers its bioavailability, efficacy and acceptability in therapeutic applications. The aim of the present study was to develop and evaluate hydrogel formulation of Indian propolis to improve its wound healing potential. Crude propolis was extracted with novel extraction technique to obtain polyphenols and flavonoid enriched extract. Hydrogel formulation was developed by physical crosslinking method with design of experiment approach for the batch optimization. Developed formulation was evaluated for various evaluation parameters that include pH, SEM, drug release, viscosity, anti microbial and *in vivo* burn wound model etc. Phytochemical analysis of Indian propolis extract confirmed the presence of flavanoids and polyphenol that are responsible in wound healing and skin tissue regeneration. Characterization of developed formulation revealed desired characteristics in terms of pH (5.4+0.24 and 5.39+0.19), FT-IR, Spreadablity (29 ± 2.258), stability and wound healing activity. *In vivo* burn wound healing activity showed significant wound contraction (69.24- 72.66%) with faster re-epithilisation compared with standard silverex nitrate hydrogel. Histopathological studies exhibited intense disposition of collagen fibres with active fibroblasts indicating their potential in accelerating the wound healing process. In overall developed formulation showed excellent characteristics, antimicrobial and wound healing potential with improved biopharmaceutical properties. This study may be extended for further investigation and clinical trials for therapeutic applications.

Keywords: *Hydrogel, Flavanoids, Indian propolis, Wound healing*

PT/ST1/0043

FORMULATION, CHARACTERISATION AND INVIVO EVALUATION OF ANTIMICROBIAL & ANTI-DIABETIC EFFECT OF NOVEL

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Abstract: N-Acetylcysteine being a drug of choice in a wide range of ailments, its poor bioavailability makes it a tougher candidate in conventional dosage form hence a novel system of N-Acetylcysteine liposomes were prepared by reverse phase evaporation using soy-lecithin in different concentrations. The prepared N-Acetylcysteine liposomes were evaluated for its particle size, zeta potential, entrapment efficiency, and SEM analysis and in-vitro drug release. The result confirms the prepared N-Acetylcysteine liposomes were unilamellar, spherical in shape and micron in size using SEM. Based on the evaluation results of prepared N-Acetylcysteine liposomes (NAC1- NAC5), formulation NAC3 is considered as the best formulation due to its better encapsulation efficiency and better particle size. Entrapment efficiency of NAC-3 formulation was found to be 86.20 %. Also results are concluded that the newly formulated N-AcetylCysteine may be ideal and effective in therapy due to their smaller particle size. In Anti-diabetic activity, the novel NAC formulation was found to be effective in the management of Diabetes. Similarly in Antimicrobial activity the liposomes are found to be effective. Hence the novel liposomal formulation can be considered as a choice in both anti diabetic activity as well as anti-inflammatory activity. As a result, the newly formulated controlled release liposomal drug delivery systems of N-AcetylCysteine may be excellent and useful in the treatment of Diabetes which should be further developed in nanoformulations .

Keyword : *N-Acetylcysteine , Anti-Diabetics , Antimicrobic , Reverse phase evaporation and Nanoformulation.*

PT/ST1/0044

Marine Diatom Biosilica Nanoparticles: A Novel Drug and Gene Delivery System and Imaging Agent

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Abstract: Diatoms, which are single-celled photosynthetic algae, seem to be the best example of porous silica that is produced naturally. Due to their special characteristics such a large pore size, high surface area, biocompatibility, biodegradability, and stable aqueous dispersion, mesoporous silica nanoparticles (MSNs) have a lot of potential for use as a drug delivery system (DDS). The focus is on medication delivery, biosensing, imaging tools, and regenerative medicine. Through nanosized pores or by coating a super-thin polymer layer, diatom silica can be easily functionalized, shielded from the elements, and engineered for controlled drug release. With a focus on various methods to enhance the physico-chemical properties with relation to drug loading and release efficiency, targeted delivery, and site-specific binding capacity by surface functionalization, insights into the usage of biosilica in the field of DDSs are elaborated. The restrictions as well as the possibilities for future development as imaging agents and drug delivery vehicles in the context of overall therapeutic treatment are discussed.

KEYWORDS: *Biosilica, Diatoms, Mesoporous silica nanoparticles, Drug delivery systems (DDS)*

PT/ST1/0045

Lactoferrin: A Glycoprotein Involved in Immunomodulation, Anticancer, and Antimicrobial Processes

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Abstract: Lactoferrin is an iron binding glycoprotein that serves several functions in the body. Its involvement in apoptotic processes in cancer cells, ability to modulate various immune system reactions, and activity against a wide range of pathogenic microorganisms, including respiratory viruses, have made it a protein of great interest in pharmaceutical and food research and industry.Lactoferrin is an immunomodulatory agent that affects both the innate and adaptive immune systems. It has antimicrobial activity against parasites, fungi, and viruses, as well as tissue regenerative and anti-carcinogenic properties.Lactoferrin's immunomodulatory and anti-inflammatory activity is related to its ability to interact with specific cell surface receptors on epithelial and immune system cells, as well as its ability to bind to pathogen-associated molecular patterns (PAMPs), which are primarily recognised by Toll-like receptors (TLRs). Lactoferrin-rich microglia cells with a high iron-binding capacity have been linked to early neurodevelopment and cognitive function in mammals, as well as an increase in cellular protrusions, microtubule dynamics, neurite outgrowth formation and organisation, cytoskeleton formation, and a decrease in anxiety. The availability of estrogens is a critical factor in the development of most breast cancers. Lactoferrin is a naturally occurring link between iron and oestrogen. The action of lactoferrin against a broad range of bacteria that are harmful for humans has been thoroughly documented due to the numerous mechanisms it performs. Apo lactoferrin effect on pathogenic protozoa are discussed in this article.

Keywords: *lactoferrin; immune system; anti-cancer activity; antibacterial activity*

PT/ST1/0046

Intestinal Permeability and Drug Absorption: Predictive Experimental and In Vivo Approaches

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Abstract: The oral route is the most practical way to administer medications. The main obstacle to the absorption of medications taken orally into the systemic circulation is the intestinal mucosa, which also includes the presence of proteolytic enzymes in the gastro-intestinal tract. Drugs are mainly absorbed from the jejunum, which is the human body part most in charge of absorption, after oral delivery. It is the site of the gut's most active carrier-mediated transport and has the biggest surface area. The drug selection process has utilised a variety of in vitro techniques to evaluate drug candidates' intestinal absorption capacity. By accounting for factors like area, hydrodynamics, and medium pH, the intestinal permeability an intrinsic constant linked to a molecule that links the flow to the concentration gradient can be used to estimate drug transport across any type of biological cell barrier.The main advantage of in vivo models is the incorporation of the dynamic components of the mesenteric blood circulation, the mucus layer, and all other factors that can influence drug dissolution. According to the pH partitioning theory, the charged species of a weak acid or base contribute nothing other than passive lipoidal diffusion across the cell lipid bilayer because they do not partition into octanol. Biopharmaceutical aspects of intestinal drug absorption are discussed in this article.

Keywords: *intestinal permeability; intestinal drug absorption; permeability prediction; therapeutic proteins.*

PT/ST1/0047

Formulation and Evaluation of levetiracetam Polymeric Nanoparticles

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Abstract: Novel drug delivery systems are gaining importance due to a wide range of advantages over conventional dosage form.Epilepsy is a disease condition in which seizures can happen at any point of time. In Order to control them the availability of drugs in the body is inevitable. In this work Levetiracetam which posses GI degradation and high first pass with low bioavailability is chosen as drug candidate to increase its bioavailability and efficacy in treatment of epilepsy.Levetiracetam nanoparticles were prepared by solvent displacement technique and the polymer concentrations were optimized by various trials.In the present study Eudragit S100 nanoparticles containing Levetiracetam was prepared. The effect of increase in polymer concentration on various parameters like particle size and in vitro release profile were studied.The Levetiracetam nanoparticles were formulated and evaluated for its in vitro drug release profile. Based on the in vitro drug release profile of Levetiracetam nanoparticles formulations (LNP1-LNP5), the formulation LNP4 was selected as best formulation due to its ideal particle size (185.7nm), zeta potential (-18.3), high entrapment efficiency (80.46%) and desirable drug release (98.50%).The in vitro %drug release of LNP4 formulation was 98.50%. The newly formulated controlled release nanoparticulate drug delivery systems of Levetiracetam may be ideal and effective to control epilepsy by allowing the drug to release continuously for 24 hrs.

Keywords: *Levetiracetam, Nanoparticles, Epilepsy, Eudragit S100, ZetaPotential.*

PT/ST1/0048

DEVELOPMENT OF MIGLITOL TRANSDERMAL DRUG DELIVERY SYSTEM FOR THE TREATMENT OF DIABETES MELLITUS

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Abstract: Miglitol reduces levels of glycosylated hemoglobin in patients with Type II (non-insulin-dependent) diabetes mellitus. Transdermal patches are polymeric formulations which when applied to skin deliver the drug at a predetermined rate across dermis to achieve active systemic effects in TDDS. The main aim of this study is to formulate Miglitol into novel Transdermal Formulation which can enhance the bioavailability and better patient compliance compared to oral route. Six formulations of transdermal patches were formulated with three different polymers, HPMC, PVP K30 and Eudragit L100 with three different ratios (MTDDS1- MTDD S6) of drug and polymers. The patches were prepared by solvent casting method.The weight of the patches varied between 45.5 ± 0.82 mg to 48.78 ± 0.76 mg. The patch had shown 100% flatness nearly which indicates negligible amount of constriction of the prepared transdermal patches. The formulation MTDDS1 which contains 300mg of HPMC has shown higher maximum absorption (14.67 ± 0.55) than the other formulation. The drug content in all formulations was found to contain 97.31 % to 98.58 % of Miglitol.In conclusion formulation MTDDS1 (300mg of HPMC) has achieved the targets of present study such as extended release, reduced frequency of administration, and thus may improve the patient compliance. Based on the result it is proposed that Miglitol can be used in the formulation of transdermal drug delivery systems for providing effective treatment for diabetes with enhanced patient compliance. s

Key Words: *Miglitol, Transdermal Patches , Diabetes Mellitus , Solvent Casting and Polymers.*

PT/ST1/0049

Formulation and Evaluation of Moxifloxacin Hydrochloride and Dexamethasone Sodium Phosphate *In-Situ* Ocular Gel

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Abstract: In the present research work, the aim was to prepare *in-Situ* Ocular Gel of Moxifloxacin Hydrochloride and Dexamethasone Sodium Phosphate to improve its local bioavailability at site of administration by temperature trigged approach. The prepared *in-Situ* Ocular Gel was the solution of drug, temperature sensitive polymer, buffering agent, preservative and purified water. The formulation was evaluated for various tests such appearance, gelling time, thermodynamic stability study, pH determination, drug content, viscosity, *in-vitro* release study, dissolution study and *in-vitro* permeation study. The optimized formulation drug release was highly significant as compared to the plain drug. All formulations of *in-Situ* Ocular Gel of Moxifloxacin Hydrochloride and Dexamethasone Sodium Phosphate were showed good gelling capacity and drug release at eye temperature

Keywords: *In-Situ* Ocular Gel, temperature sensitive polymer and bioavailability

PT/ST1/0050

FORMULATION AND EVALUATION OF EMULGEL CONTAINING LIQUORICE EXTRACT

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Abstract: Emulgel is one of the most important topical drug delivery system as it has double release control system i.e emulsion and gel. The emulsion is incorporated into the gel matrix to prepare emulgel which forms a viscous formulation and provides better permeation and stability. The aim of this study is to formulate emulgels containing ethanolic extract of Liquorice and evaluate the formulations for better and improved therapeutic activity. Hydrophilic and hydrophobic drugs can be easily incorporated in nano-emulsion and stability can be enhanced with the help of a gelling agent. 9 formulations were prepared using different concentrations of oil phase (liquid paraffin), surfactant (tween 80) and (Polyethylene glycol 400) as co-surfactant by spontaneous emulsification method. Region of nano-emulsion system was found in the pseudo-ternary phase diagrams developed at different ratios of surfactant and oil. Nano-emulgels loaded with drugs were characterized for particle size, viscosity and *in-vitro* drug release studies. The result showed that the ethanolic extract of liquorice was loaded in water in oil type of emulsion and was found to be homogenous, and the *in-vitro* release study shows that F4 formulation shows the maximum drug release. As it combines the advantage of an emulsion and gel it can be concluded that ethanolic extract of liquorice nano-emulgel can be effectively used as a topical dosage form.

Keywords: *nanoemulsion, liquorice extract, nanoemulgel*

PT/ST1/0051

Formulation and evaluation of Niosomal gel loaded with *Asparagus Racemosus* extract for Anti-inflammatory activity

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Abstract: *Asparagus racemosus* extract was chosen as a drug candidate for present study due to presence of various types of saponins and flavonoid. Also plant origin drug have fewer side effects and toxicity. The phytoconstituents of *Asparagus racemosus* extract has less permeability through the skin; so to enhance their permeability and the effectiveness it was loaded in niosomes. Therefore the objective of the study was to design, formulate and characterize the niosomal gel loaded with *Asparagus racemosus* extract for anti-inflammatory activity. The niosomes containing total saponins in extract was prepared by 2^3 full factorial designs using thin film hydration method. The span 60 and cholesterol were selected as independent variable. Vesicle size, PDI, zeta potential, percentage entrapment efficiency was considered for responses. The niosomes were optimized based on the responses with minimum particle size, minimum PDI, maximum zeta potential and maximum entrapment efficiency. Shape and surface morphology of optimized niosomes were seen under optical microscopy and scanning electron microscopy, it was spherical in shape and uniform in size.
10% of niosomal and conventional gels were prepared by incorporated optimized niosomes and extract containing total saponin in 1% carbopol gel respectively. Prepared gel was evaluated for *ex vivo* studies on goat skin using a modified Franz diffusion cell. The niosomal gel provided a significantly higher amount of steady state flux and permeability coefficient into the skin compared to conventional gel. Animal model proved that niosomal gel loaded with total saponins in extract showed significant anti-inflammatory compare to the control.

Keywords: *Asparagus racemosus extract, niosomes, span 60, cholesterol, factorial design, carbopol 934.*

PT/ST1/0052

FORMULATION AND EVALUATION OF HERBAL TOOTHPASTE FOR SENSITIVE TEETH

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Abstract: The primary goal of the current study was to formulate and assess herbal toothpaste for sensitive teeth. Dental pain from exposed dentin surface that is hypersensitive to stimuli (usually thermal, evaporative, tactile, osmotic, or electrical) is known as dentinal hypersensitivity. Dental sensitivity brought on by tooth decay, a cracked tooth, worn enamel or an exposed tooth root as a result of aggressive tooth brushing or periodontal disease or both. Developing herbal toothpaste using clove oil (*Syzgium aromaticum*) and Neem (*Azadirachta indica*) leaves as analgesic and antimicrobial agent. The dry gum method was utilised to create a herbal toothpaste. Soxhlet was used to create an ethanolic extract of Neem leaves. Antimicrobial test was conducted using staphylococcus aureus. The physical characteristics and pH of the toothpaste were assessed. The ability to spread, be abrasive, foam etc. The formulation includes clove oil as a potassium nitrate inhibitor. Results- The highest level of activity was seen in the Neem leaf ethanolic extract in regard to staphylococcus aureus. The natural toothpaste that can gratify everyone under the circumstances needed to prevent bacterial growth and maintain the mouth clean. A good and stable composition, smooth in nature, distinctive flavor and was a pale green color.

Keywords: *Sensitivity, Syzgium aromaticum, Azadirachta indica*

PT/ST1/0053

Potential of *Sesamum indicium*: an approach to restore symbiosis

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Abstract: Prebiotics are a subset of prebiotics, which are substances that encourage the development of good bacteria. Prebiotics are non-digestible food components that support the development of healthy bacteria in the intestine. Regular consumption of prebiotics confirms health benefits such as a lower risk of cardiovascular disease, improve healthier cholesterol levels, gut health, improved digestion, and lower stress response. *Sesamum indicium* is the main source of calories. Sesam seed contains sesamin, sesamolin, and beneficial fibers called lignans that have cholesterol-lowering effects and are also useful in the growth of beneficial micro-organisms. After oil extraction, the leftover Sesamum indicium pomace (SIP) is a source of dietary fiber used as a prebiotic substance. The selected *Lactobacillus acidophilus* (LA) was able to grow on SIP. It showed an increase in optical density, pH, lactic acid production, and dry mass obtained after 48 hrs incubation as compared to the control. Extracted prebiotics had a greater effect on the growth of strain and a greater pH lowering effect in a reconstituted MRS medium containing SIP. The result indicated that an increase in the to the control. From all the parameters, it was concluded that the SIP had great prebiotic potential and can promote the growth of *Lactobacillus acidophilus* and inhibit the replication of pathogenic bacteria. Restored probiotic in colon can help to improve the immunity.

Keywords: *Sesamum indicium, Prebiotics, Lactobacillus acidophilus,*

PT/ST1/0054

Floating hydrogel embedded self-generating microbubbles for treatment of urinary tract infection.

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Abstract: The existing approaches to treating urinary tract infections are poorly developed and lack site-specific delivery to the targeted site.The present study was focused on formulating floating hydrogel with self-generating micro-bubbles for the treatment of urinary tract infection to achieve longer residence time and sustain the release of drug in the bladder to improve the efficacy of drug.The floating hydrogel was formulated using Poloxomer 407, ammonium bicarbonate, and corn silk solution and optimized by applying the central composite design.The anti-inflammatory activity of corn silk was evaluated by determining the inhibition of protein denaturation using egg albumin. The optimized floating hydrogel was characterized for bubble size, gel strength, the effect of pH, floating lag time, duration of floating, antimicrobial activity and *in–vitro* release. The optimum formulation of floating hydrogel was obtained at Poloxomer concentration(2.3g) and ammonium bicarbonate concentration of 0.9g. The analysis of floating hydrogel for pH, viscosity, bubble size, and gel strength demonstrated its ability and efficacy to achieve effective intravesical instillation of amoxicillin trihydrate for the treatment of urinary tract infection. The corn silk solution exhibited effective anti-inflammatory activity. The optical microscopic images revealed the spherical morphology of entrapped bubbles in the hydrogel. The hydrogel exhibited antimicrobial activity against *E-coli.* Sustained release of drug was observed with 99.05% release at the end of 10h. The floating lag time was 60s and the duration of floating was observed till 12h. The floating hydrogel with self-generated micro-bubbles could be considered beneficial for intravesical instillation for the treatment of urinary tract infections.

Keywords: Amoxicillin trihydrate, Poloxamer 407, Cornsilk solution, Carbopol 907, Intravesical instillation

PT/ST1/0055

Betamethasone dipropionate loaded Niosomal Based gel for the treatment of Psoriasis

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Abstract: The objective of the present research work was to develop niosomal based gel of Betamethasone dipropionate (NGB) in order to achieve better permeation and high drug retention into the deeper layers of the skin for the effective treatment of Psoriasis. Niosomes were prepared by thin film hydration method using different ratios of drug, cholesterol and surfactant such as Span 20, 60, 80 and were evaluated for vesicle size, shape, entrapment efficiency and *in vitro* diffusion studies. Highest entrapment efficiency of 81.06±1.25 % and drug release of 87.3±1.34% in 4h was obtained for F6 formulation. Formulation F6 was then incorporated in to 1% Carbopol 934 gel base and was further evaluated. Drug release studies for NGB had 82.04±0.12% drug release at the end of 6h while *ex vivo* studies through porcine skin showed 38.04±0.65% drug release in 6h. Drug retention of 36.24±0.05% and 25.26±0.03% respectively was observed in dermis and epidermis layers. FTIR peaks indicated that there is no interaction between drug and excipients. From the DSC studies, it was evident that drug was completely embedded in the cholesterol which indicates the amorphous nature of the drug. TEM images reveals that the vesicles were spherical in shape with size range of 100-200 nm. Zeta potential and polydispersity index values revealed that the niosomal dispersion was stable and vesicles were homogeneously dispersed. From the above studies it can be concluded that the niosomal gel formulation has a great potential to treat psoriasis effectively due to high drug retention in skin layers.

Keywords: *Betamethasone, niosomes, gel, psoriasis, drug retention*

PT/ST1/0058

Novel Biodegradable Techniques for Bone Regeneration

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Abstract: Coral sand as it is a rich chemical source of various physiological activating substances and has been used in bone tissue repair and regeneration. They are preferred for their biocompatibility, osteoconduction, osteointegration, and osteogenetic effects. The aim of the present study was to extract β-Tricalcium phosphate(β-TCP) from coral sand and to prepare β-Tricalcium phosphate microspheres by single emulsion technique. FTIR studies reveal the identification of a mixture of calcium carbonate and β-TCP from the converted coral sand. The presence of calcium and phosphate was confirmed by a chemical test and EDS analysis. Prepared β-TCP microspheres were solid, discrete, and free-flowing, and micrometric properties were well within the limit. Scanning electron microscopy(SEM) studies showed that the prepared microspheres were spherical. XRD studies confirm the presence of β-TCP peaks from the prepared microspheres. The prepared microspheres are again converted into gelatin sponges and scaffolds by freeze drying technique with various optimization techniques. Different evaluation parameters were performed; based on the above studies, the gelatin concentration of 5% at pH 7.5 of 0.5%w/v with a stirring speed of 1400-1500 RPM was found to give stable foam and ideal pore size for bone regeneration (200-350µm). Collagen around 2gm and 2.5gm were found to provide the required pore size around 280-320µm at 10,000 RPM, whereas collagen less than two has given a very small pore size. So formulations FCS 3.3 and FCS 4.3 will be further evaluated for tensile strength and swelling ratio.

Keywords: *Coral sand, gelatin sponge, scaffold, osteoconduction, osteogenetic, osteointegration*

PT/ST1/0059

Lipid-Based Catechin Loaded Lyophilized Nanomicelles with enhanced Bioavailability: Design and Characterization

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Abstract: Catechins are the primary natural flavonoids that posses potential therapeutic benefits including antioxidant, anti-angiogenic, anti-tumor, anti-obesity, and anti-inflammatory having poor bio-availability limiting their clinical use. The poor bio-availability is attributed to its lower solubility and poor absorption in the intestine due to active efflux by *P-Glycoprotein.* The current study sought to improve the therapeutic efficacy of catechin-loaded nanomicelles by designing and optimising them to increase their solubility and decrease P-Glycoprotein-mediated efflux in the colon. The thin film hydration method was employed to prepare catechin nanomicelles using gelucire 48/16, gelucire 55/18 as a polymer, and ethanol: water as a solvent system. The effect of the drug: polymer ratio and stirring speed were studied and optimized using a 3-level, 2-factor, factorial design. The prepared nanomicelles solutions were further lyophilized and evaluated for particle Size, polydispersity index, Zeta potential, entrapment efficiency, saturated solubility, *In-vitro* dissolution, scanning electron microscopy, XRD, *Ex-vivo* absorption, stability study, etc. The particle size of prepared batches was found in the range of 69±1.3 to 576±2.1 nm with entrapment efficiency ranging from 61.84±2.1 to 87.34±1.7 % w/w. The optimized catechin nanomicelles system showed 5-fold and 3-fold enhancements in aqueous solubility and *In-vitro* dissolution respectively. The results of *Ex-vivo* absorption studies performed by everted sac technique using rat intestine indicated 72.56±1.9% absorption of catechin from nanomicelles formulation compared to 27.55±0.7% from pure catechin. The results of this study suggest that nanomicelles are a viable alternative for increasing catechin bioavailability without affecting their intended functional advantages.

Keywords: *Catechins, P-Glycoprotein, Nanomicelles, Bioavailability, Thin film hydration method.*

PT/ST1/0060

Formulation and Evaluation of Loratadine Chewable Tablet For Anti-Histamine Activity

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Abstract: Antihistamines are used for managing allergic conditions such as rhinitis, conjunctivitis, and acute reactions associated with itchiness due to the release of histamine. Loratadine is a second-generation anti-histamine drug having H1-receptor antagonist with anti-allergic properties without producing sedation. It is extensively metabolised in the liver and hence, the present study aimed to develop the Loratadine-loaded chewable tablet for anti-histamine activity to prevent from hepatic metabolism and improve its therapeutic efficacy. The chewable tablets are widely accepted by modern-day patients owning for their easy administration and better taste. Four different formulations were developed by the direct compression method. All these formulations have been developed including Lactose Monohydrate, Povidone K-30, Micro Crystalline Cellulose, Maize starch, Magnesium stearate, Aspartame and Talc as excipients. All formulations were characterized for loratadine by differential Scanning Calorimetry and evaluated the stability. The weight variation was within the range of ±5% complying with pharmacopoeia specifications. The thickness of the tablets was found to be between 3.58 to 3.80 mm. The hardness for different formulations was found to be between 2.10 to 2.80 kp, indicating satisfactory mechanical strength. The friability was below 0.5% for all the formulations, which is an indication of the good mechanical resistance of the tablet. Formulation containing Colloidal silicon dioxide and Sodium starch glycolate as super disintegrants showed better drug release. The stability studies indicated that all the formulation were stable at 40°C for 28 days. Thus, the present study concludes that loratadine chewable tablets can be successfully developed for anti-histaminic activity.
Keywords: *Loratadine, Anti-Histamine, Chewable tablets, allergic reaction, super disintegrant*

PT/ST1/0061

Design and Characterization of Lipid Based Freeze Dried Quercetin Nanosuspension with Improved Bioavailability

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Abstract: Quercetin, a wonder flavonoid with numerous pharmacological effects, has limited clinical applicability because of problems with solubility and permeability as well as a shorter biological half-life. The study aims to formulate and optimize quercetin nanosuspension to improve its oral bioavailability and sustain its in-vivo plasma levels. Quercetin nanosuspension was prepared by the precipitation-ultrasonication method using ethanol as solvent, water as anti-solvent, gelucire 43/01, and copmritol as a stabilizer. The effect of the drug: polymer ratio and probe sonication time were studied and optimized using a 3-level, 2-factor, factorial design. The prepared nanosuspensions were further lyophilized and assessed for mean particle size, polydispersity index, Zeta potential, drug content, saturated solubility, *In-vitro* dissolution, scanning electron microscopy, differential scanning calorimetry, X-ray diffractometry, *Ex-Vivo* permeation, stability study, etc. The particle size of prepared batches was found in the range of 143±2.6 to 477±1.2 nm with zeta potential ranging from -13.38 to -23.91 mV. The optimized quercetin nanosuspension formulation batch demonstrated a 6-fold increase in solubility compared to pure drug with 93.15±2.7% drug release in 8 h. The results of *Ex-vivo* absorption studies performed by everted sac technique using rat intestine indicated 67.49±1.6% permeation of quercetin from the optimized formulation in 8 h compared to 15.37±2.7% of pure drug. The outcome of the current study indicated that quercetin nanosuspension formulation with improved stability could serve as a promising approach for enhancing its overall bioavailability for its multifarious clinical use.
Keywords: *Quercetin, Nanosuspension, Precipitation-ultrasonication method, Solubility, Permeation.*

PT/ST1/0063

Characterisation, Formulation and evaluation of seed oils for skin disorders

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Abstract: Skin ageing is a complicated process that affects all living things. Vegetable oils give the epidermis a barrier that shields it and stops water loss. Polyunsaturated fatty acids, Phenolic and flavonoid content present in grape seed (GSO), papaya (PSO), and flaxseed oil (FSO) are reported for their antioxidant and moisturizing effect when applied as topical formulation for skin care.

In the present work,an attempt was done to determine content of phenolics , flavonoid, and fatty acids in seed oils and screen them for their in-vitro anti-oxidant activity. Further, a nano emulgel was formulated and optimized using Tween 80 and Transcutol and was evaluated for its physicochemical properties and stability.

Based on the total phenolic and flavanoid content of the oils was determined using rutin trihydrate and gallic acid as standards. The GSO, PSO, and FSO physicochemical testing were successful. The % oleic acid content was determined by using HPTLC where in PSO had the highest oleic acid content (54.04) as compared to GSO and FSO. All oils showed significant antioxidant activity and exhibited good tyrosinase enzyme inhibition due to the phenolic components, tocopherols, and carotenoids. Based on the phytoactives present, nanoemulsion in different proportion (3% Oil mix and 5% oil mix in ratio of 1:1:1 and 1.5:1.5:2 for GSO: PSO: FSO) was formulated and globule size and PDI of optimized nanoemulsion batch was obtained 181 nm and 0.320 respectively. Further there is need to optimize formulation,study assay and drug dermatokinetics .

Keywords: *anti-aging products, skin disorders, grape seed oil , Flaxseed oil, antioxidant.*

PT/ST1/0065

Development and characterization of nanoemulsiongel for topical delivery of dithranol

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Abstract: The transdermal drug delivery route is one of the most efficient systems for controlled drug administration, which eliminates all the demerits and causes no GI adverse effects. Vesicular systems are amongst the most favorable methods for delivering the drug moiety through the transdermal route. The infected skin patches on the tips of fingers, hands, feet, and scalp, are chronic autoimmune disorders of psoriasis. Topical therapy is most widely used for the treatment of psoriasis in the majority of patients. Many drugs are less permeable when spread throughout the psoriasis skin due to their physicochemical properties. Dithranol is a hydroxyyanthrone, anthracene derivative, which is used to treat psoriasis. The objective of this research is to formulate a Dithranol-loaded Nanoemulsion gel for treating Psoriasis. By the high-speed Homogenization method, the nanoemulsion was prepared. followed by the ultrasonication technique. The zeta potential, entrapment efficiency, and particle size, of the optimized formulation, were -0.1mV, 0.189, and 176.7nm, respectively. As per the results of DSC and FTIR, the drug was completely bounded with a lipid matrix. The *In-vitro* release study showed a rapid release of drug in the early stage, followed by slow sustained drug release lasting 300 minutes, this resulted in 94.937% of the drug being released. The stability study conducted for 90 days confirmed that the Nanoemulsions were stable. The obtained results suggest that Nanoemulsion may be a promising drug delivery system over the conventional dosage form.

Keywords *Psoriasis, Nanoemulsion, Nano Technology, Transdermal therapy, In vitro drug permeation.*

PT/ST1/0066

Synergistic suppression of cellular activities using a combinatorial drugs regimen toward triple-negative breast cancer

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Abstract: Triple-negative breast cancer (TNBC) has a low prognosis rate as there is an absence of estrogen, progesterone and downregulation of human epidermal growth receptor type 2 (HER2). Another reason for the low prognosis rate is the heterogeneity of cancer cells in a single individual. Nano-formulation with lipid base provide better drug delivery to the tumour cells, negligible adverse effects, reduced toxicity and have a role in reversing multi-drug resistance. Compound X is a natural ortho-naphthoquinone which is acquired from the lapacho tree bark. Compound Y is a natural flavonoid present in various plants, which possesses anticancer activity and has the ability to inhibit the rapid growth, invasiveness and metastasis of tumours. In this experiment liquid crystalline nanoparticles (LCNPs) loaded with compounds X and Y respectively, were formulated. Optimisation of the formulations was carried out, particle size and PDI of compound X were 192.1 nm, 0.191 and compound Y were 153.9 nm and 0.134 respectively. Entrapment efficiency was calculated to be 99.9% for compound X and 97.2% for compound Y. *In vitro* drug release studies of X-loaded LCNP showed 72.5% and Y-loaded LCNP showed 81.9% drug release at the end of 72 hours. Stability studies of the LCNPs were conducted for a period of 60 days at 4 °C and 25 °C where the formulations were more stable when stored at lower temperatures. Cell viability studies of drug-loaded LCNPs, PEGylated LCNPs and F3 peptide LCNPs were done against cell lines of MDA-MB-468 and MDA-MB-231 for 24 and 48 hours.

Keywords: *Triple-negative breast cancer (TNBC), Liquid crystalline nanoparticles, cytotoxicity, Polydispersity Index (PDI), entrapment efficiency.*

PT/ST1/0067

Enhancing Therapeutic efficacy of Sulfasalazine by combining prebiotic for treatment of Ulcerative colitis

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Abstract: Ulcerative colitis (UC) is a disease that causes inflammation and sores called ulcers in the lining of the rectum and colon. Current therapy includes anti-inflammatory drugs. Sulphasalazine (SZ), a drug used to treat UC which has shown reduction in number of relapses in patient. SZ has shown dose related side effects. Prebiotics are indigestible food ingredients that beneficially affect the body by selectively stimulating the growth and activity of health-promoting probiotic bacteria and thus improve host health. They play a major role in maintaining healthy balance of intestinal microbiota by providing energy source of the beneficial intestinal microbiota. Use of prebiotic alone in UC treatment could result slow recovery. Combination of drug and prebiotic can be used effectively and can enhance the activities to treat UC. The main objective of the study was to formulate and evaluate combine pellets of SZ and fructooligosaccharide (FOS) to form modified release pellets by spheronization technique and to optimize formulation parameters such as concentration of MCC. The optimize core pellets formulation was coated with Eudragit S100 to optimize delayed release of drug. The SZ pellets after coating with Eudragit S-100 showed release up to 7 hours. Added prebiotic in the formulation helped to restore the symbiosis in the colon which was observed through increase in *Lactobacilli* and *Bifidobacterium* count, lower pH and short chain fatty acids formation. Thus, combination of drug and prebiotic could be responsible for the speedy recovery from the UC and would reduce the side effects of the drug.

Keywords- *Ulcerative colitis, Sulphasalazine, fructooligosaccharide, prebiotics,*

PT/ST1/0068

CUBOSOMES AS NOVEL DRUG DELIVERY

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Abstract: Cubosomes are highly stable nanoparticles formed from the lipid cubic phase and stabilized by a polymer based outer corona. They are delivered from amphiphilic lipids and polymer-base stabilizers. The delievery form contains bicontinous lipid bilayer which is arranged in three-dimensional, cubic, honey-comb like structure with two internal aqueous channels tp produce large space. They have a lot of advantages in biocompatibility and thermodynamics stability. It will be perform as sustained release. This prosses replace current prosses that requires long hold times. The high energy inputs to create cubosome nanoparticle dispersion. The size, shape and phase of these structures can be controlled by the rational design of the molecular structure of building blocks.

Keywords: Nanoparticles, Lipid cubic phase, aqueous channel, thermodynamic stability, molecular structure.

PT/ST1/0069

Formulation and Evaluation of Cyclodextrin Nanosponges loaded with Silk Fibroin to Treat Oral Mucosal Bleeding

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Abstract: During surgery, the blood vessels get distributed which causes excessive bleeding. But in oral surgery, this can be controlled by pressure. Even with pressure, the blood flow can sometimes not be stopped, so haemostatic topical gel or creams are applied to control the bleeding during or after the surgery. Silk Fibroin has the property of clotting the blood and fastening the healing process. Cyclodextrin Nanosponge-based oral gel of Silk fibroin was developed as a potential system for treating oral mucosal bleeding. Nanosponges were synthesized using the classical hot melt method using β-Cyclodextrin as polymer and Dichloromethane as cross-linker. For optimization 3^3 factorial design was used. Prepared Nanosponges were characterized by conducting FTIR, DSC, XRD and SEM studies. Fabricated Nanosponges were made in gel and assessed for *in-vitro* release, drug content, viscosity, rheology, spreadability, *in-vitro* antimicrobial study and stability study. Optimized Silk fibroin Nanosponges were roughly spongy in nature and spherical in shape with a particle size of 142.5 nm and exhibit entrapment efficiency of 78% and zeta potential of 23.39 Mv. Optimized Nanosponge based gel demonstrated prolonged drug release of 82.78% gel up to 12 hrs. Nanosponges gel remained well within the colloidal range, and uniform dispersion was noted post-gelling. The prepared nanosponge gel was evaluated for its antimicrobial property. The stability study showed the gel formulation was stable in normal conditions. Developed oral gel revealed higher resistance time and reduce the clotting time. This can be used in the future while performing the surgery.

Keywords: Nanosponges, Cyclodextrin, Oral mucosal bleeding, Oral cavity, Nanotechnology, Haemostatic agent

PT/ST1/0070

Formulation and evaluation of castor oil containing self-emulsifying pellets by using Design of Experiment

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Abstract: The objective of the study was to examine the feasibility of extrusion/spheronization techniques for converting liquid castor oil into solid self-emulsifying pellets. Phase titration method was used to construct pseudo ternary phase diagram between castor oil, different surfactant and co-surfactant and water. A D-optimal mixture design was used for formulating self emulsifying pellets using castor oil, surfactant, cosurfactant, lactose, MCC, corn starch and HPMC by extrusion spheronization technique. The effect of composition of oil, surfactant and cosurfactant blend on dispersion time, resultant globule size and polydispersibility index was studied. Additionally, pellet flow properties, hardness, size distribution and disintegration time was also evaluated. The morphology of castor oil pellets was observed by scanning electron microscopy (SEM). Free flowing pellets were obtained with 30% of oil loading. SEM revealed sphericity and smooth surface of the oil loaded pellets. This developed system can serve as a carrier system for any activity as well as can also be used for delivery of castor oil.

Keywords: *Solid self-emulsifying drug delivery system, castor oil, pellets, extrusion spheronisation, Dispersion time.*

PT/ST1/0071

Development and validation of UV- Spectrophotometric method for simultaneous estimation of Ciprofloxacin HCl and Quercetin in bulk powder

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Abstract: The compilation of biofilm prompts the hindrance of Ciprofloxacin HCl like bounteous antibacterial specialists however merges with compounds acting like anti quorum sensing such as Quercetin, in a single formulation, is a compelling strategy for the treatment of such infections. The anticipation of the current examination is to create and approve another analytical technique for the synchronous assessment of Ciprofloxacin HCl and Quercetin in its mass powder. According to Q2A&B ICH guidelines for specificity, selectivity, linearity, precision, and accuracy, two strategies-the simultaneous equation approach (I) and the absorbance ratio method (II)-was designed and validated. The absorbance maxima (λmax) for Ciprofloxacin HCl were at 271 nm, while those for Quercetin were at 327 nm, and the coefficient correlation was found to be 0.999 and 0.997 respectively. At a maximum of 283 nm, their isosbestic point was observed. When absorbances were measured at all of the aforementioned λmax both Ciprofloxacin HCl and Quercetin showed linearity in the focus range from 1 µg/ml to 10 µg/ml. With less than 2% relative standard deviation (%RSD) the developed procedures were determined to be exact and precise. As a result, the developed UV Spectrophotometric approach based on absorptivity measurements can be utilized for in vitro depiction and concurrent assessment of Ciprofloxacin HCl and Quercetin as it was found to be basic, quick, specific, selective, linear, precise, and accurate in their unadulterated and consolidated dose structure.

Keywords: *biofilm, Ciprofloxacin HCl, Quercetin, simultaneous equation method, absorbance ratio method*

PT/ST1/0072

Personalized Medicine: Application of 3D Printing in Pharmaceutical Drug Delivery

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Abstract: Pharmaceutical advancement in technology has paved a way for the therapy of disease through personalization moving away from conventional methods that depend on production in mass. Three-dimensional printing (3DP) or additive manufacturing is an emerging rapid prototyping technology that prints complex 3D pharmaceutical dosage forms according to the need of the patient by using various approaches controlled by computer-aided design software. This review is aimed to project the recent 3D research applicable to dosage form modelling in pharmaceutical field. This article presents a few 3DP technologies appropriate for drug fabrication with their applications in the improvement of the drug dose structures, demonstrating the feasibility of this innovation in regular commercial production with regulatory assessment. The various types of 3D printing technologies, the application of 3D printing technology and lastly, the materials used for 3D printing technology in manufacturing industry and future perspectives.

KEYWORDS: *Personalized medicine, pharmaceutical, 3D Printing technology, drug fabrication, innovation.*

PT/ST1/0073

Application of Thiolated Carrageenan as Mucoadhesive Polymer in Vaginal Drug Delivery

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Abstract: Vaginitis is a gynecological infection affecting one third women at least once during their lifetime. The infection is often mixed infection, recurrent and difficult to treat. Metronidazole is a broad-spectrum antibiotic that is frequently used to treat mixed infections. Although topical therapy is mostly preferred due to symptomatic relief, the failure in the infection management is often the result of insufficient concentration of drug reaching to vaginal tissue owing to self-cleansing action of vagina. Mucoadhesive formulations increase the retention time of drug in vagina and gives prolonged effect. Carrageenan is one of the polysaccharides with reported antibacterial, and antiviral action. In the present work, thiolated carrageenan was synthesized to increase the mucoadhesion and formulated as a vaginal tablet with Metronidazole. Thiolation was carried out with thioglycolic acid and degree of thiolation was calculated by Ellman's method. Presence of Thiol group was confirmed by IR and DSC study. Ex-vivo mucoadhesion in goat vaginal mucosa demonstrated enhanced TC mucoadhesion. *In-vivo* vaginal irritation study in female wistar rats demonstrated safety of thiolated carrageenan with no significant irritation in vaginal tissue. A non-fickian method of drug release was demonstrated by the metronidazole tablet of TC, which had a significant water absorption and prolonged drug release (89.3% in 8 h). In-vitro antibacterial efficacy of TC tablet against E. coli led to a 100% reduction in microbial count at 24 hours, showing high antibacterial action. In conclusion, the mucoadhesive tablet of TC offered viable method for delivering local medication in cases of vaginal infections.

Keywords: *Thiolated carrageenan, Mucoadhesive, antimicrobial properties, Metronidazole, Vaginal tablet*

PT/ST1/0074

Sprayable herbal formulation for interactive wound dressing application

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Abstract: A wound is a disruption in the skin's epithelial integrity that can alter the underlying normal tissue's form and function. For centuries, people have employed medicinal plants to treat a variety of diseases. The modern concept of wound repair includes accelerated healing by applying bioactive dressings made of synthetic or natural polymers and growth factors. The current study intended to construct a high-efficacy Couroupita guianensis wound healing hydrogel film by utilizing PVA-Chitosan hydrogel and a cross-linking method. Considering the antibacterial capabilities of Couroupita guianensis, it was chemically cross-linked into PVA/Chitosan hydrogel films in this research, and the characteristics of the films were studied. The ability of Couroupita guianensis ethanolic extract to treat wounds was investigated. The results show that Couroupita guianensis speeds up wound healing by reducing the surface area of the wound and enhancing tensile strength. To create the spray-able film, we selected borate and tripolyphosphate as cross-linking agents. Viscosity and spreadability characteristics were used to optimize the gel. The optimized batch were selected with tensile strength and % drug dissolution as 66.67 N/cm^2 and 82.09 ± 2.66 % respectively. The developed formulation was tested using the same evaluation parameters as traditional formulations. In many in vitro and in vivo studies using animal models, it was found to be quite effective.

Keywords: *Couroupita guianensis, wound healing, Hydrogel, chitosan, PVA, bioavailability*

PT/ST1/0075

Development of Gliclazide Nanosuspension for Improving Dissolution and Oral Bioavailability

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Abstract: The objective of this study was to formulate gliclazide nanosuspension to improve its dissolution rate and oral bioavailability. The oral antihyperglycemic drug gliclazide has a poor aqueous solubility and a slow rate of dissolution, which contribute to its insufficient and inconsistent oral bioavailability. Gliclazide nanosuspensions were prepared using precipitation ultrasonication method and the effect of various process and formulation variables on nanosuspension formulation was investigated. Nanosuspension was evaluated for particle size, polydispersity index (PDI), surface morphology by FESEM, solubility, drug content, dissolution profile, and oral bioavailability. The lyophilized nanosuspension was characterized by FTIR, DSC and XRD. It was observed that for the optimized nanosuspension, particle size and zeta potential were 160.8 nm and -52.0 mv, respectively. Gliclazide nanosuspensions exhibited markedly enhanced dissolution rate (89.7 % after 8 h of dissolution) compared to gliclazide drug (43.5 %). The Cmax and AUC 0→24 value of nanosuspension was approximately 1.5-fold and 9.6-fold greater than gliclazide drug. The study demonstrated that nanosuspension formulation is a promising approach for oral delivery of Gliclazide with improved bioavailability.

Keywords: *Gliclazide, Nanosuspension, Precipitation-ultrasonication method, particle size, dissolution, bioavailability*

PT/ST1/0076

Preparation and Evaluation of Atorvastatin Cocrystals

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Abstract: Cocrystals continue to gain interest in the modern day due to their ability to modify the physical properties of solid-state materials, particularly pharmaceuticals. Intensification of cocrystal research efforts has been accompanied by an expansion of the potential applications where cocrystals can offer a benefit to pharmaceutical research. Where drug solubility manipulation was seen as the primary driver for cocrystal formation, cocrystals have recently shown to provide attractive options for taste masking, mechanical property improvement, intellectual property generation and extension. Cocrystals are becoming a commercial reality with a number of cocrystal products currently on the market and more following in registration and clinical trial phases. In the present research area, Atorvastatin cocrystals were synthesized characterized and evaluated for its safety and efficacy. The goal of this present research work is to prepare, characterize, to evaluate the safety and efficacy of Atorvastatin cocrystals. The prepared Atorvastatin cocrystals were characterized for the formation of cocrystals by FTIR, DSC, SEM and PXRD evaluated for its antihyperlipidemic and hepatoprotective activity. Spectral data confirmed the formation of cocrystals by FTIR initially followed by difference in melting points in the DSC graph and finally confirmed by SEM and PXRD. Biological evaluation data further proved the synergistic effect of nicotinic acid and also ascorbic acid taken with Atorvastatin in a cocrystal, also safety and efficacy was confirmed by the hepatoprotective activity of cocrystals. Here with putting all the data together we can say that these Atorvasatin cocrystals as safe and efficacious related to hepatoprotective which is lacking in normal pure Atorvastatin. Therefore by carrying out further research on these cocrystals we could expect some potential drug candidates to come up with better safety and efficacy profiles in the mere future.

Keywords: Atorvasatin, nicotinic acid, ascorbic acid, cocrystal, FTIR, DSC, SEM, PXRD, antihyperlipidemic, hepatoprotective activity

PT/ST1/0077

Mucoadhesive Microspheres for Nose-to-Brain Delivery of Zolmitriptan

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Abstract: In the Indian system of medicine, the nasal drug delivery system i.e (Nasya karma) was renowned as one of the capable treatments. The systemic strategies were used prominently in the nasal route for CNS delivery but faced many limitations including the blood-brain barrier and CSF barrier. In recent years research has been extensively focused on the nose to brain delivery via the intranasal route by targeting the olfactory region. This investigation aimed to prepare mucoadhesive microspheres for the nose-to-brain delivery of zolmitriptan. The mucoadhesive microspheres were prepared by two methods. The first method was emulsion crosslink in which glutaraldehyde was used as a crosslinking agent, while the second method employed spray drying in which the parameters were optimized with varying drug and polymer ratios. Chitosan was selected as the bioadhesive polymer. Microspheres prepared by both methods were subjected to evaluation for percent yield, swelling property, shape and size determination of particle, drug content, entrapment efficiency, mucoadhesive, *and in-vitro* drug release study. The formulations were optimized based on their particle size, entrapment efficiency, and *in-vitro* drug release. The in-vivo brain biodistribution study was carried out using a rat model in which the results showed the presence of zolmitriptan in the Cerebro-spinal fluid after intranasal administration of the microspheres. The spray drying method was found to be the best suitable method for the formulation of the stable mucoadhesive microspheres which was suggested as the novel drug delivery platform for the nose-to-brain delivery of zolmitriptan.

Keywords: *Nose to the brain, Zolmitriptan, Microspheres, Mucoadhesive, Emulsion crosslinking, Spray drying.*

PT/ST1/0078

Multi-herbal remedies for the treatment of childhood obesity

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Abstract: Children's obesity is a complicated disorder. To treat childhood obesity, numerous allopathic over-the-counter and prescription drugs are utilized, but they have several undesirable side effects, such as greasy stools, abdominal pain, diarrhea, and gas. To overcome and minimized the above side effect the safer option with have been reports of using herbal medications to treat obesity in the Ayurvedic system of ashwagandha, haritaki, and curcumin supplements were chosen for polyherbal treatment formulation. According to the solubility test, ashwagandha and haritaki are soluble and curcumin is insoluble in water. curcumin solid dispersion by hot melt method was made using three different hydrophilic polymers to increase its solubility i.e., PEG 6000, PEG 4000 and HPMC. Wet granulation was used to create an optimized curcumin solid dispersion, ashwagandha & haritaki powder blend, granules to form chewable tablets using varying concentrations of PVPK30 as binding solution. In vitro drug release study showed 79.25% Haritaki, 80.51% ashwagandha and 81.33% of curcumin in 130 min. 6.2 Kg/cm^2 hardness and 21min disintegration time are both achieved in F5 batch with 40 mg of binder concentration when the results of the FTIR compatibility research between curcumin and polymer were interpreted, it was found that there was no interaction between the two substances. Six distinct batches were coded using the F1, F2, F3, F4, F5, and F6 methods. All batches are examined using different pre and post-compression parameters, and the outcomes With complete acceptance, batch F5 was optimized.

Keywords: *Children's obesity, Ashwagandha, Haritaki, Curcumin, Solid dispersion, chewable tablets*

PT/ST1/0079

FORMULATION, OPTIMIZATION, AND EVALUATION OF NANOSTRUCTURED LIPID CARRIERS OF LOVASTATIN

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Abstract: Parkinson's disease (PD) is a neuro degenerative disorder, influences neuromotor ability, speech and is caused by the death of dopamine-producing brain cells. Currently, only a few approved drugs are utilized to partly relieve the motor symptoms of PD. Unfortunately, none of them was proved to stop or reverse this inevitable disease progression. Several clinical studies have shown that statins, the commonly used lipid-lowering drugs could reduce the risk of PD. Lovastatin (LVT) has been found to have neuroprotective benefit in PD. Nanoparticles for drug delivery are often made up of biodegradable components such as natural or synthetic polymers, and lipids. Nanostructured lipid carriers (NLC) are a promising strategy for drug delivery into the brain, given the efficacy of these nanoparticles in passing through the BBB and their limitations, particularly in terms of toxicity and stability. They have a prominent drug entrapment efficiency, making the drug more stable in their lipid matrix, and prolonging the drug release. Lovastatin has poor aqueous solubility and thus shows low bioavailability. Hence, the use of NLCs could be a promising approach to overcome these limitations. As a result, LVT incorporated in NLC is non-toxic, biocompatible, and biodegradable. Overall, better pharmacokinetics, efficacy, and safety have been achieved using these nanocarriers. NLC is prepared by the hot homogenization method. The effects of independent variables on dependent variables were determined using the Box Behnken design. The optimized LVT-NLC was assessed for polydispersity index (PDI), entrapment efficiency (EE), Particle size (PS), and *in vitro* drug release studies. The PS, PDI, and EE were found to be 116 nm, 0.163, and 79.89%, respectively. The LVT containing NLCs showed a prolonged release and met the requirements for brain targeting, thus proving to be a promising approach for effective PD management.

Keywords: *Lovastatin, Nanostructured lipid carrier, Parkinson disease, the blood-brain barrier.*

PT/ST1/0082

Spectrophotometry Technique and HPLC for Method Development and Validation of Ticagrelor

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Abstract: The present study was aimed at developing a simple, selective, and accurate analytical method for the analysis, estimation, and validation of ticagrelor in formulations and bulk form. HPLC and UV spectrophotometric techniques were employed. The chromatographic separations were done on Shimadzu HPLC in reverse phase using column C18G (250×4.6 mm) as the stationary phase, acetonitrile: formic acid in the ratio of 90:10 v/v as the mobile phase at a flow rate of 1.0 ml/min. The elution was carried out at 255nm. The retention time of 3.58 min, linearity range of 0.2-1.0 µg/ml, and a correlation coefficient of 0.9931 was obtained for ticagrelor. The method developed was tested for precision, accuracy, linearity, robustness, ruggedness, detection limits, and quantification limits and also subjected to various stress conditions like oxidation, hydrolysis, thermal degradation and photolysis. The developed method was found to be simple, precise, accurate, specific, and rapid. The validation studies showed that the method was also robust. The results also indicate that the method has potential for further usage in estimating known and unknown impurities in commercial samples of ticagrelor.

Keywords: *Ticagrelor, HPLC, UV spectrophotometry, Retention time, Linearity*

PT/ST1/0083

Development and characterization of mouthwash from a fast dissolving tablet containing an amphiphilic surfactant for oral hygiene

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Abstract: Mouthwashes are a part of personal hygiene to ensure protection from oral pathogens and thereby preventing the occurrence and transmission of microbial disorders. In this study, an attempt is made to develop a fast-dissolving tablet containing an amphiphilic surfactant, cetylpyridinium chloride which upon dissolving in the required amount of purified water expected to be an effective mouthwash for oral hygiene. Being a solid dosage form, this product may offer a convenient way for transportation and storage. Cetylpyridinium chloride has broad-spectrum antimicrobial activity along with antiplaque and deodorizing activities in the oral cavity. Crospovidone in 2-5% w/w concentration was used as superdisintegrant, starch as binder (2 to 7% w/w), and talc as gliding agent and saccharin sodium as sweetening agent. A total of 14 formulations were suggested by the software by altering the concentrations of superdisintegrant and binder without altering the concentration of drug, cetylpyridinium chloride. The quality control tests on selected parameters for tablets were performed. Design expert Stat Ease software (free trial) was used to develop a design space to find out the various combinations of input parameters. Based on the quality control tests and numerical and graphical optimization, an optimized formula was identified as the best formulation. The optimized formulation was compared with the synthetic marketed product. The results showed better antimicrobial activity for optimized formulation. The investigation suggested the possibility of developing a safe, effective, and economical and eco-friendly alternative for the existing marketed liquid mouthwashes for oral hygiene.

Keywords: *Cetylpyridinium chloride, Fast dissolving tablet, Crospovidone and Stat ease design expert software.*

PT/ST1/0084

Formulation and evaluation of a biodegradable *in situ* gel of an antibacterial drug for controlled ocular drug delivery

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Abstract: The aim of the study was to formulate and evaluate a biodegradable *in situ* gel of an antibacterial drug for controlled ocular drug delivery. The antibacterial drug selected was Ciprofloxacin hydrochloride which is a broad-spectrum antibiotic used in the treatment of corneal ulceration and bacterial infections. A solution of Ciprofloxacin hydrochloride was formulated with the help of a polymer, poloxamer by cold method suggested by Schmolka. This solution when instilled into the eye an *in situ* gel is formed at the site of application which could sustain the drug release. Poloxamer 188 and 407 were used in combinations as thermosensitive polymers and HPMC K4M and Chitosan were used as rate controlling polymers. All the batches formulated were subjected to evaluations. The optimised batch FRP-II contains poloxamer 188:407 in the ratio 15:23 (%w/v) and HPMC K4M: Chitosan in the ratio 1:1 (%w/v) and it exhibited a cumulative drug release of 98.84±0.45% and the release was extended upto 420 min. As per the result of stability study FRP-II batch was found to be stable. It followed a zero-order non-fickian diffusion controlled drug release pattern as per kinetic study. Hence it was concluded that thermosensitive polymer poloxamer 188 and 407 in the ratio 15:23 (%w/v) was able to form an *in situ* gel at the temperature of eye. Along with the combination of HPMC K4M and Chitosan in the ratio 1:1 (%w/v), FRP-II formulation was able to deliver Ciprofloxacin hydrochloride in a controlled manner for ocular drug delivery.

Keywords: *Antibacterial, Ciprofloxacin hydrochloride, in situ gel, Biodegradable, Thermosensitive polymer, Poloxamer 188, Poloxamer 407.*

PT/ST1/0085

Design, Development and characterization of Lentinan Loaded Novel Ultra- deformable Transferosomes for Skin Cancer

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Abstract: Skin cancer, an abnormal growth of skin most often develops on skin exposed to the sun. The major drawback of the current cancer therapy is non ability to deliver drug to the target, causing the drug to have an effect on both normal and cancer cells. Many drugs used in conventional therapy have low solubility, high metabolism and are hydrophobic, making them biologically unavailable leading to systemic toxicity. Sustained release becomes important to supply the skin with a drug over a prolonged period of time hence a vesicular delivery system such as ultradeforfmable vesicle i,e. Transethosomes was considered to be formulated for improve the permeation of anticancer drug Lentinan. Lentinan loaded transethosomes were prepared by Mechanical Dispersion Method. 3^2 full factorial design was successfully employed for the optimization of Lentinan laoded transethosomes. The compatibility assessment of drugs and excipient was done with the help of FTIR and DSC. The results showed the compatibility between the drugs and excipients. In present study, different ratio as 10mg, 15mg, 20 mg of sodium deoxycholate used, at ratio 15 mg found optimum % Entrapment efficiency. The batch F1 having highest % EE showed highest amount of drug release. The release kinetics showed the matrix model as best fit model and release was significant change (p□0.05).

Keywords: Skin cancer, Transethosomes, Lentinan, Entrapment efficiency, *In Vitro* Release

PT/ST1/0086

FORMULATION AND EVALUATION OF ANTIAGING CREAM CONTAINING RESVERATROL

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Abstract: Resveratrol, an antioxidant polyphenol, has been the subject of intense interest in recent years due to a range of unique anti-aging properties. Resveratrol has the antioxidant properties, thus can protect cells against oxidative damage associated with the effects of free radicals and UV radiation on the skin and it slows down the process of photoaging of the skin. it also helps improve the look of fine lines, hyperpigmentation, texture and overall radiance. The aim of the present study was to formulate and evaluate an antiaging cream containing Resveratrol. Antiaging cream containing Resveratrol was prepared using stearic acid, olive oil, polyethylene glycol, glycerine, triethanolamine, tween 80, sodium benzoate, rose water and water and formulated cream was evaluated for pH , spread ability and stability. The prepared cream exhibited good spread ability, good consistency, homogeneity with good appearance, pH, and no evidence of phase separation and easy of removal. Resveratrol Antiaging cream having antioxidant property could be used as a safe, stable, homogeneous and effective topical formulation to protect and avoid aging of skin.

Keywords: *Resveratrol, antioxidant , antiaging*

PT/ST1/0087

Formulation and characterization of solid lipid nanoparticle loaded mucoadhesive thermoreversible nasal in-situ gel of Ropinirole hydrochloride for Parkinson's disease

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Abstract: Parkinson's disease is a CNS degenerative ailment results due to the death of dopamine-generating cells in the substantia nigra. Administering Ropinirole hydrochloride (ROP) nasally as a selective nonergoline dopamine D2 receptor agonist, which promotes the production of dopamine by striatal dopamine receptors. The main objective of the study was to develop and evaluate SLN loaded *in situ* nasal gel of ROP for assuring site specific targeting and enhancing bioavailabilty. By using a double emulsion technique, SLNs of ROP were formulated and then cold-incorporated into an *in situ* gel matrix made up of poloxamer 407 and HPMC K4M. Formulations exhibited gelation at nasal temperature, and it was discovered that the gelation period was less than the mucociliary clearance time. Due to mucoadhesion and increased gel strength, it was observed that the nasal residence time had risen. The ex vivo drug release for the optimised nasal gel formulation showed sustained release pattern of 81.26 ± 1.5 upto 12 hours. It can be inferred that the ROP SLN loaded intra nasal *in situ* gel can successfully cross mucous membrane, reach systemic circulation and provide sustained drug release for 12 hours. Hence intranasal delivery of ROP by SLN loaded intranasal in situ gel can be a very promising approach for patients suffering from Parkinson's disease.

KEY WORDS- *In situ gel, Parkinson's disease, SLN, Poloxamer 407, HPMC K4M*

PT/ST1/0089

ENHANCEMENT OF ANTIFUNGAL POTENTIAL & EFFICACY OF DRUG THROUGH LIPOSOMAL DRUG DELIVERY SYSTEM

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Abstract: Occurrence of skin fungal infections is increasing nowadays, although, a large number of antifungal agents are available for treatment of skin fungal infections but their toxic profile and physicochemical characteristics reduce therapeutic outcome. The conventional topical options suffer from limitations and are compromised with respect to patient compliance, safety, and efficacy of therapy. Hence, liposomal vesicular topical delivery system could be a better alternative for skin fungal infections. Eberconazole nitrate (EBZ) is an imidazole derivative used topically in the treatment of superficial fungal infections against a wide range of pathogens including *Candida* spp., *Malassezia* spp., dermatophytes, and gram-positive bacteria. The present investigation aimed at enhancing the antifungal potential of eberconazole through liposomal drug delivery system. Topical formulation of EBZ 1% w/w liposomal gel was thus formulated & studied for various parameters. Liposomes formulated by ethanol injection method were characterized for morphology, Entrapment efficiency, Particle size, TEM, Zeta Potential & in vitro drug release. Liposomal gel was formulated using Carbopol-950. Animal study on albino rats showed significant efficacy of liposomal gel against cutaneous candidiasis in comparison to control group animals. The optimized formulation (F4) showed, particle size (0.468µm), drug entrapment efficiency (90%), percent drug released (68%), zeta potential(-12.4mV) and showed good antifungal activity in albino rats. Thus formulated EBZ 1% w/w liposomal gel can be promising formulation for treating fungal infections.

Keywords *: Eberconazole nitrate, antifungal, liposomal gel, cutaneous candidiasis, skin.*

PT/ST1/0090

FORMULATION AND EVALUATION OF LOVASTATIN SUSTAINED RELEASE PELLETS BY USING NATURAL GUMS

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Abstract: The study's goal was to create and develop sustained release pellets of Lovastatin (LVA) by using natural gum Acacia as a binder. Lovastatin is a potent inhibitor of 3- hydroxy-3-methylglutaryl coenzyme A (HMG CoA) reductase. Lovastatin is a statin, a class of agents used to treat Hypercholesterolemia. The rate-limiting enzyme in cholesterol production, HMG CoA reductase, is competitively and irreversibly inhibited by lovastatin. For the treatment of hypercholesterolemia, LVA is given orally. LVA is administered in dosages of 10, 20, and 40 mg, with a daily maximum of 80 mg. LVA is an HMG CoA reductase inhibitor used to lower LDL cholesterol and reduce the risk of cardiovascular disease and associated conditions, including myocardial infarction and stroke. The formulation was prepared by using different concentrations of natural gum binder Acacia using extrusion and spheronization techniques. A thin layer of HPMC solution was coated and the pellets were dried. The physicochemical parameters of LVA compacts were assessed, including their FTIR flow properties, hardness, *in vitro* release, and release kinetics. There was no interaction between the polymer and lovastatin, according to the FTIR Spectra. Lovastatin compacts' *in vitro* performance revealed that sustained release is dependent on the polymer concentrations.

Keywords: *Lovastatin, Hypercholesterolemia, HMG CoA, Acacia, Sustained release*

PT/ST1/0091

TEMPERATURE MAPPING STUDY OF WALK-IN INCUBATOR

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Abstract: Storage devices, such as Walk-In Incubator are used in pharmaceutical industries to store the raw materials/finished goods. To qualify such devices, various regulatory guidelines suggest storage devices to be qualified with a worst-case approach. This work envisages the theoretical and practical concepts of temperature mapping and various tests performed for the qualification of walk-in incubator. Before start of work, a protocol was prepared to carry out qualification activities including the critical parameters for effective mapping. The test performed for the qualification of walk-in incubator are Empty chamber study, loaded chamber study, Power Failure study, Door open and Recovery study, Come up study. The overall test performed for mapping resulted in effective distribution of temperature and relative humidity (RH). Hence the results obtained from the mapping study concluded/revised that the walk-in incubator is qualified for the intended purpose. Temperature mapping is done using different temperature sensors and the data obtained in every time interval are stored in data loggers the thermosensors used for temperature maping studies are RTD Sensors and thermocouple sensors. Using the data remitted by the following sensors and data loggers the validation and the qualification of the walk-in-incubator is done.

Keywords: *Temperature, Walk-In Incubator, Qualify, Power failure study*

PT/ST1/0092

REPOSITIONING OF BENZIMIDAZOLE BROAD-SPECTRUM ANTHELMINTICS FOR THE TREATMENT OF CANCERS

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Abstract: The process of identifying a new application for an existing drug is known as “Drug repositioning”. Benzimidazoles class of anti-parasitic drugs such as Albendazole, mebendazole, cambendazole, parbendazole, and fenbendazole are considered in the repurposing drug for the treatment of cancer therapy. Several in vitro and in vivo studies have demonstrated promising anticancer effects of albendazole and mebendazole. This review article explains the pharmacokinetics and pharmacodynamics properties of benzimidazole anthelmintic with anticancer mechanism, challenges of anthelmintic in cancer therapy, and strategies to overcome these challenges. Also, experimental and clinical evidence about the use of anthelmintic drugs as anti-tumorigenic effects were summarized. The available data shows the repositioning of the benzimidazole class of anthelmintics in cancer therapy, further studies are required for a better understanding of the pharmacokinetic and pharmacodynamic profile of benzimidazole class of anthelmintics as antitumorigenic effects.

Keywords: Albendazole, Mebendazole, Drug Repositioning, Anthelmintics, Anticancer therapy.

PT/ST1/0094

FORMULATION AND EVALUATION OF HERBAL FACE CREAM

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Abstract: The objective of the study was to formulate and evaluate herbal face cream using Curcumin and Flax seeds gel. Curcumin is effective at reducing inflammation and has a shielding effect on the skin. Traditional herbal treatments for inflammation and skin diseases frequently contain curcumin. The herbal cream containing curcumin was prepared by using stearic acid, cetyl alcohol, vitamin oil, polyethylene glycol, glycerine, triethanolamine, tween80, sodium benzoate, EDTA, rose oil and water evaluation of all formulations (F1 to F3) was done on different parameters like pH, viscosity, spreadability, washability and greasiness test were examined. Formulation F3 showed good spreadability, consistency, appearance, pH, ease of removal, and no evidence of phase separation. At room temperature, the cream's pH was discovered to be 6.5. The viscosity of the formulated cream was found to be 9560cps. The evaluation's findings were deemed good and consistent with global standard values.

Keywords: *Curcuma longa, W/O cream, Curcumin, Herbal face cream.*

PT/ST1/0095

"GREEN SYNTHESIS AND CHARACTERIZATION OF SILVER NANOPARTICLES CONTAINING OCIMUM SANCTUM LEAF EXTRACT AND THEIR ANTICANCER ACTIVITY ON HUMAN ORAL CANCER CELLS"

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Abstract: The objective of the study was to synthesize and characterize silver nanoparticles (NPs) containing Ocimum sanctum leaf extract and their anticancer activity on human oral cancer cells lines. Silver NPs were synthesized by green synthesis method. AgNPs were characterized by UV analysis, ZP, particle size, XRD, FTIR, TEM, SAED, EDX, DPPH, FRAB and PM assay, MIC, MBC, zone of inhibition (ZOI), hemolytic assay and invitro anticancer activity by MTT assay. O. sanctum AgNPs gel was evaluated for pH, viscosity, spreadability, (ZOI) and stability. Formation of AgNPs was observed by visual color change (colorless to dark brown) and was confirmed by UV peak. ZP and particle size of AgNPs were -29.4±1.41 and 85.52±0.577nm. XRD confirmed crystalline nature of AgNPs , TEM revealed roughly spherical shape, EDX confirms presence of elemental silver. FTIR confirmed flavonoids, protein, phenolic, aromatic and alkyne groups contributed to AgNPs synthesis. In-vitro antimicrobial results showed O. sanctum AgNPs possess good broad-spectrum activity. The MTT assay that AgNPs inhibited the human oral cancer cell. The exposure of AgNPs on RBC cells showed less toxicity suggesting biocompatibility. The O. sanctum AgNPs gel was formulated with pH 6.9±0.1, viscosity (249cps), spreadability (23.52±0.155). The MTT study was performed by measuring and comparing the diameter of (ZOI) for 0.2% Tulsi-AgNPs gel against the marketed product. Results showed antibacterial activity of prepared Tulsi-AgNPs was higher than the marketed product against the tested microorganisms. Hence, AgNPs exhibited multifunctional properties that could treat human oral cancer.

Keywords: *silver nanoparticles, green synthesis, characterization, antioxidant, anticancer.*

PT/ST1/0096

Microsponge Based Emulgel of Simvastatin for Wound Healing Activity

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Abstract: The motive behind work was to formulate and evaluate hydrogel and emulgel containing microsponge of simvastatin to provide prolonged release of medicament for wound repair. Simvastatin loaded microsponge was prepared by Quasi-emulsion solvent diffusion method using ethyl cellulose as a polymer. The physiochemical interaction between drug and polymers were investigated by FT-IR study. The prepared microsponges were evaluated for mean particle size, drug content, entrapment efficiency, and in- vitro drug release. Based on the results F6 was selected as the best formulation as it shows maximum entrapment efficiency of about 87.84%±0.13, the particle size of 71.83µm ± 0.09 and in-vitro drug release of about 83.93%± 0.25 at the end of 8 hours. Surface morphology of F6 formulation was studied by using scanning electron microscopy reveals that microsponge were spherical in shape and porous in nature. The optimized microsponges were incorporated in hydrogel and emulgel, then they were evaluated for physical appearance, viscosity, pH, spreadability, drug content, in-vitro diffusion study. The results of diffusion study revealed that emulgel has shown better drug release of about 74.30%± 0.58 at end of 8 hours compared to hydrogel. Wound healing activity of hydrogel and emulgel was performed on Wister rats using excision wound model. The stability studies revealed there was no significant difference in physical appearance, pH, % drug content before and after the storage of hydrogel and emulgel preparation.

Keywords: *Microsponge, Ethyl cellulose, emulgel, hydrogel, Simvastatin.*

PT/ST1/0097

"DELIVERY OF SIMVASTATIN FROM SPONTANEOUS FILM FORMING POLYMERIC SOLUTION FOR WOUND HEALING: FORMULATION, DEVELOPMENT AND EVALUATION"

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Abstract: The objective of this work was to formulate and evaluate spontaneous film forming polymeric solution of simvastatin for wound healing. Different formulations were prepared by varying concentration of polymer namely Hydroxy propyl cellulose (HPC), Polyvinyl pyrrolidone (PVP) and Eudragit RLPO and concentration of solvent. The formulations were evaluated. The compatibility study was done by using FTIR, the results of which revealed compatibility of ingredients with each other. The prepared film forming solution was evaluated for film formation and drying time, the results of which revealed that Eudragit RLPO has shown to form a uniform film with rapid drying time rate as compared to HPC and PVP, *in-vitro* drug release study suggested that Eudragit RLPO series of formulation showed maximum drug release of 84.82±0.27% at the end of 24 hrs. The results revealed, E1 as the best formulation and it showed satisfactory results for parameters like film flexibility (flexible), drug content (82.05±0.12%), swab study, thickness (0.27±0.01mm), viscosity (4.5cps), pH determination (6.73±0.05), tensile strength=0.0075±0.1kg/cm2, % elongation at break (42.85±0.140%), WVTR (0.079±0.2g/cm2 t), % moisture loss (17.04±0.3%), % moisture uptake (27.36±0.3%) and SEM (interconnected porous network). E1 formulation was subjected for wound healing activity using excision wound model in Wistar rats and stability study. The results revealed that, complete wound closure was seen within 21days with complete epithelization. Stability study data revealed no significant difference in % drug content and % drug release during their study.

Key words: - *Simvastatin, FFS, Eudragit RLPO, HPC, PVP, Wound healing.*

PT/ST1/0098

Design and Characterization of GastroProtective Beads of Pantoprazol and Immediate Release Fractions of Domperidon for Acid Reflux

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Abstract: The objective of the present investigation was to develop Duocap of fast dissolving fraction of Domperidone maleate and IPN beads of pantoprazole sodium for simultaneous delivery to treat acid reflux. Pantoprazole sodium IPN beads were prepared using sodium carboxy methyl cellulose and egg albumin by ionotropic gelation and covalent cross linking method Small gelatin shells were exposed to formalin vapors to make it enteric one, in which IPN beads of pantoprazole sodium was placed, this capsule was encapsulated in larger capsule with fast dissolving granules of Domperidone maleate. The prepared IPN beads and fast dissolving granules were evaluated for various parameters. Stability study for the best formulations was carried out according to ICH guidelines. Compatibility studies showed that there were no interactions between the drugs and excipients. The drug content of the IPN bead of Pantoprazole sodium was found to be 78.91±0.44% and 79.45±0.45 in 0.1N HCl and phosphate buffer pH 7.4 respectively and 89.06±0.23% and 87.17±0.23% for Domperidone maleate granules in 0.1N HCl and phosphate buffer pH 7.4 respectively. Entrapment efficiency was found to be 97.11±0.07 and 96.06±0.02 of IPN beads in 0.1N HCl and phosphate buffer pH 7.4 respectively. In vitro drug release of Pantoprazole sodium beads was found to be 93.45±0.92% for up to 7 hours and Domperidone maleate was observed to be 88.34±1.56% for 2 hours. Hence F2 was found to be the best formulation. SEM examinations revealed that beads were uneven in shape with smooth surface. From the result it was concluded that the developed Duocap device was found to show promising option for the simultaneous delivery of Pantoprazole sodium and Domperidone maleate.

Keywords: *IPN beads, sodium carboxy methyl cellulose, egg albumin, Pantoprazole sodium, Domperidone maleate.*

PT/ST1/0099

"TRANSDERMAL DRUG DELIVERY OF TRANSFERSOMES LOADED BUSPIRONE HYDROCHLORIDE"

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Abstract: The motive behind present work was to prepare and evaluate transferosomes based transdermal film containing Buspirone hydrochloride for the treatment of anxiety. 5 formulations of transferosomes (TF's) were prepared by thin film hydration method with varied concentration of phospholipid and sodium cholate and were evaluated for compatibility study, entrapment efficiency, drug content, surface morphology, particle size, zeta potential (ZP), PDI, in-vitro and ex-vivo release profile and kinetic data. The formulation was incorporated in film prepared by solvent casting method using HPMC E15 LV and glycerol and were evaluated for physical appearance, surface texture, weight uniformity, thickness, folding endurance, tensile strength, % moisture loss, *in-vitro* and ex-*vivo* drug release and stability. The TF's suspension showed drug content in the range of 88.69±1.03% to 96.42±1.78, % entrapment efficiency (18.57±0.35% to 34.76±0.27%), *In-vitro* drug release (36.81±0.60% to 75.93±0.18%), *Ex-vivo* drug release (25.68±0.18% to 62.93±0.28%), SEM revealed that TFs were roughly spherical in shape. ZP of TF's was in the range of -16.9 to 6.22 mV, PDI was in the range of 0.157 to 0.37. The particle size of the transferosomes were found in the range of 55.67 nm to 371.4 nm. The TF's film showed drug content of 97.09±0.1.11%, in-vitro drug release of 73.25±0.84% in 24hr, ex-vivo drug release of 62.87±0.28% in 24hr. Results showed that prepared TFs was a promising carrier for the delivery of buspirone hydrochloride through skin for the treatment of anxiety

Keywords: *Transferosomes, transdermal film, Buspirone hydrochloride, anxiety.*

PT/ST1/00100

Bioactives Incorporated Topical Preparation for Wound Healing

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Abstract: The main purpose of the current investigation was to formulate and evaluate topical preparation containing bio actives for the wound repair. The bioactives like coconut oil, honey, Jatyadi tail and extract of *Moringa oleifera* known to have wound healing activity. The effectiveness of these bioactives increases when incorporated in suitable topical bases. The bioactives loaded topical like hydrogel, emulgel, and film forming gel were prepared using different methods. These agents have good antibacterial, anti-inflammatory, anti-oxidant activity. The gels were formulated using different polymers with varied concentration of xanthum gum, carbopol- 934 and eudragit RL 100. Different batches of formulation were prepared by dispersion method and characterized. The wound healing activity was assessed by the rate of wound contraction, skin irritation test, and histopathology study. Stability study for the gel was carried out according to ICH guidelines. The results of physical evaluation parameters such as appearance, homogeneity, pH, viscosity, and spreadability were found to be satisfactory. In excision wound animal model coconut oil hydrogel, honey hydrogel, honey emulgel, Jatyadi tail hydrogel showed significantly good wound healing activity than other formulations. Formulation F3, F5, F6, F7 showed complete wound closure and epithelization as compared to other formulations. In all the cases, there was progressive decrease in wound area with time, indicating an efficacy of the formulation in healing the induced wounds. From the study it was concluded that herbal formulations possess potent wound healing activity, which could be a good choice of remedy for wound repair.

Keywords: *Gels, Excision wound model, Bioactives, Wound.*

PT/ST1/00101

"A NOVEL MICROSPONGE CUTANEOUS DRUG DELIVERY OF SALICYLIC ACID FOR PSORIASIS"

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Abstract: The purpose of the current research was to develop and assess various gel formulations incorporating salicylic acid microsponges to give sustained release for improved psoriasis treatment. Using ethyl cellulose as a polymer, the quasi-emulsion solvent diffusion approach was used to create the salicylic acid-loaded microsponge. For the purpose of optimising microsponges, a 3^2 factorial design method utilising Design-Expert® was used. By using FT-IR and DSC, the physiochemical interaction of the medication with the polymers was identified. Mean particle size, entrapment effectiveness, and in-vitro drug release of the produced microsponges were assessed. From 3^2 factorial design, formulation M8 was selected as the best formulation as it shows maximum entrapment efficiency of 74.15 ± 0.855, the particle size of 138.29 ± 0.16 µm and *in-vitro* drug release of about 81.75 ± 1.83 % at the end of 8 hours. Surface morphology of M8 formulation was studied by using scanning electron microscopy which reveals that microsponge were spherical in shape and porous nature. The optimize formulation was incorporated in hydrogel and emulgel were characterized for physical appearance, grittiness, pH, spreadability, drug content respectively. *In-vitro* diffusion study was performed for hydrogel and emulgel. The results of diffusion study revealed that optimize formulation M8-emulgel has shown better drug release when compared to hydrogel. Antipsoriatic activity of all gel formulation was performed on Balb/c mice skin model. The stability studies revealed no significant difference in physical appearance, pH, % drug content before and after the storage of gel preparation.

Keywords: *Microsponge, salicylic acid, factorial design.*

PT/ST1/00102

"A NOVEL HYDROGEL BANDAGES OF ASCORBIC ACID FOR WOUND CARE"

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Abstract: The principal objective of present study was to develop ascorbic acid hydrogel bandages that were flexible for use in treating wounds. With varying concentrations of sodium alginate and gelatin, a total of 9 formulations of hydrogel dressings were created for the current investigation using the temperature effect and solution casting approach. The compatibility of each hydrogel dressing formulation was assessed, along with its thickness, weight variation, folding endurance, swelling behaviour, moisture content, moisture uptake, water vapour transmission rate, mechanical strength, drug content, *in-vitro* release profile, kinetic data analysis, and film topography. Pores were visible on the patch's surface, according to film topography data. The outcomes of the studies on drug content, *in-vitro* diffusion, swelling index, tensile strength, and water vapour permeability revealed that F2 was the best formulation, with a drug content of 96.361.81% and *in-vitro* diffusion of 94.331.26% at the end of 8 hours. The drug release was confirmed to be non-Fickian diffusion, and the release kinetic investigation proved that all formulations followed first order kinetics with diffusion mechanisms. The developed hydrogel bandages resulted in improved wound contraction in wistar rat animal model with wound healing. Furthermore, the stability studies found no substantial differences in the drug content and release rates of the hydrogel dressing preparation before and after storage.

Key words: - *Ascorbic acid, hydrogel dressing, gelatin, sodium alginate.*

PT/ST1/00103

Microsponge Based Film forming Polymeric Solution of Aceclofenac for Arthritis

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Abstract: The motive behind present work was to formulate and evaluate film forming solution containing microsponge of aceclofenac the treatment of Rheumatoid Arthritis. The aceclofenac loaded microsponge was prepared by Quasi-emulsion solvent diffusion method using ethyl cellulose as a polymer. A two factor, three level (3^2) factorial design using Design-Expert® was employed for the optimization of microsponges. The physiochemical interaction between drug and polymers were investigated by FT-IR and DSC spectra study. The prepared microsponges were characterized. From three level (3^2) factorial design, formulation F8 was selected as the best formulation as it shows maximum entrapment efficiency of about 96.31±0.29, the particle size of 131.29 ± 0.51 µm and *in-vitro* drug release of about 72.38 ± 0.29 % at the end of 8 hours. Surface morphology of F8 formulation was studied by using scanning electron microscopy which reveals that microsponge were spherical in shape and porous nature. The optimize formulation was incorporated in film forming solution. The results of diffusion study revealed that film forming solution showed better drug release of about 70.77 ± 1.05 % at end of 8 hrs. The stability studies revealed no significant difference in physical appearance, pH, % drug content before and after the storage of film forming solution preparation. From the results, it was concluded that the microsponges film forming solution of bearing aceclofenac would be a promising carrier for topical delivery across skin for the treatment of rheumatoid arthritis.

Keywords: *Microsponges, Ethyl cellulose, aceclofenac, factorial design.*

PT/ST1/00104

"BIOSYNTHESIS, CHARACTERIZATION AND ANTIFUNGAL ACTIVITY OF PLANT MEDIATED SILVER NANOPARTICLES USING TRACHYSPERMUM AMMI"

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Abstract: The Objective of this study was to synthesize silver nanoparticles using an aqueous extract of *Trachyspermum ammi* seed extract and to evaluate its antifungal activities by green synthesized method and characterized by UV-Visble spectroscopy, FTIR, XRD, TEM, EDX,SAED, ZP, DPPH, FRAB and PM assay, *in-vitro* antifungal activity by MIC, MBC, zone of inhibition (ZOI), hemolytic assay. *T.ammi* AgNP's gel was formulated and evaluated by pH, viscosity, spreadability, zone of inhibition and stability study. The formation of AGNPs was confirmed by visual color change confirmed by UV peak. Crystalline nature of AgNP's was confirmed with XRD. ZP and particle size of silver nanoparticles was -41.7mV and 101.5nm.TEM revealed that particles are roughly spherical in shape with sizes ranging from 15 to 25nm. EDX determine the concentration of silver was 96.40% *T.ammi* AgNP's.The IC50 value was found to be 7.45µg/ml was done by DPPH assay.The AgNP's had a good antifungal activity when compaired to plant extract against *A.niger*, *C.Albicans*, *C.Parasilopsis* , *C.Tropicals*. The *T.ammi* AgNP's gel was formulated with pH 6.7±0.1,viscosity was 279cps and spredability **v** 23.16±0517 these value suggests that gel having good spredability.The *in-vitro* antimicrobial study was performed measuring and comparing the diameter of (ZOI) for 0.2%*T.ammi* AgNP's gel against the marketed product. Result revealed antifungal activity of prepared *T.ammi* AgNP's was higher than that of marketed product. Hence, green synthesized silver nanoparticles have good antifungal activity due to the presence of bioactive molecules on the surface of AGNPs.

Keyword: *T.ammi* silver nanoparticles, UV-visible, FTIR,XRD, TEM, EDX, Antioxidant activity, Antifungal activity.

PT/ST1/00108

Formulation and Evaluation of Self Micro-Emulsifying Drug Delivery System for an Antidepressant

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Abstract: Venlafaxine is an antidepressant drug that belongs to the SNRI class of antidepressants. Since the drug undergoes hepatic first pass metabolism, its oral bioavailability is only 45%. There is a need to create a formulation that would improve its oral bioavailability. The objective of the study was to formulate and evaluate a self-micro emulsifying drug delivery system (SMEDDS) for an antidepressant drug Venlafaxine HCl. The preliminary study was performed on surfactants to check emulsification ability. Based on solubility and preliminary screening, Oleic acid and Caprol PGE 860 were selected as oils with combination of Tween 20 as a surfactant and propylene glycol as a co-surfactant. To evaluate the area of micro emulsification, pseudo ternary phase diagrams were constructed. From microemulsion region, Liquid SMEDDS formulation was prepared which was further converted to solid SMEDDS by spray drying. The optimized SMEDDS was thermodynamically stable with 94-99.06% of drug release within 30 min, and particle size of 17.50 nm. Ex vivo permeation study of SMEDDS formulations through rat duodenum demonstrated higher permeation of formulation compared to drug solution. In vivo antidepressant and antianxiety activity in rats by forced swim test and EPM maze test model showed significant effect of SMEDDs formulation on immobility, mobility and climbing, time spent in open arm, time spent in closed arm. Thus, our study revealed that the SMEDDS of Venlafaxine HCl could be an alternative to conventional oral formulations.

Keyword: *Venlafaxine HCL, Caprol PGE, antidepressant drug, self-micro-emulsifying drug delivery system*

PT/ST1/00109

Proniosomal gel as an alternative Strategy to enhance localized delivery of Paclitaxel

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Abstract: The development of proniosomes, a promising drug carrier has emerged as an approach to stabilize the niosomal drug delivery system without damaging its characteristics. These can be hydrated and turned into niosomes before usage. This is an approach for maintaining physical stability and vesicle integrity. The current study is attempting to develop a Paclitaxel (PTX) proniosomal gel to provide sustained drug release to the affected tissues. Proniosomes were prepare from coacervation phase separation method and then evaluated for entrapment efficiency, particle size, zeta potential, and morphology. To find the most effective delivery mechanism, in vitro release behavior, ex vivo penetration through rat abdomen skin, in-vitro cytotoxicity, hemolytic toxicity, skin irritation and skin deposition were studied. The results suggested that release of PTX from pure PTX solution and PTX Carbopol gel was rapid while in case of proniosomal gel it showed extended release up to 24 hrs. and showed percent skin permeation 2.52-fold higher than PTX solution and 3.17-fold higher than plain PTX Carbopol gel. Hemolytic toxicity of proniosomes and proniosomal gel was less than 50% when compared with PTX solution and Plain PTX gel. Findings of this study suggested that the proniosomal formulation could be a potential formulation for local paclitaxel delivery with improved drug delivery and lower toxicity.

Keywords: *Niosomes, Proniosomes, Paclitaxel, Transdermal delivery, localized delivery.*

PT/ST1/00110

Synthesis of adhesive polymers and its functional group characterization and interaction study with drug using analytical techniques

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Abstract: Recently, there has been a resurgence in interest in creating new methods for delivering current medicinal compounds. Transdermal drug delivery (TDD) allows for a constant blood level profile, a regulated release of the medication into the patient, less systemic adverse effects, and occasionally higher efficacy than conventional dose forms. The basic goal of the TDD system (TDDS) is to administer medications into systemic circulation through the skin at a set rate with little patient-to-patient variability. For designing the optimal transdermal drug delivery system, drug-polymer interaction study is important. Adhesive interaction study is very important parameter to select appropriate and optimal TDDS. There are several methods mentioned for Drug and PSA (adhesive) interaction studies and some of the analytical methods used are FTIR spectroscopy, NMR spectroscopy and Differential Scanning Calorimetry methods. In the present study we tried to design a monolithic adhesive matrix type transdermal drug delivery patch using NSAID that is Celecoxib and synthesis of Adhesive polymer was done with two different functional groups and nonsteroidal anti-inflammatory drug was introduced for interaction studies. Analytical characterization by Infra-red spectroscopy and Differential scanning calorimetry was performed for plain adhesive and after addition of Celecoxib drug. The glass transition temperature was increased (-36°C to -30°C) in case of -COOH functional group adhesive, after addition of drug which indicates there is an interaction of drug molecule and polymer whereas for -OH functional group the glass transition temperature remains same. This would help in screening the adhesive for further preparation of transdermal drug delivery system.

Keywords: *TDDS, Celecoxib, PSA, Polymer, FTIR, DSC, Glass transition temperature*

PT/ST1/00113

Microneedle for transdermal drug delivery: Periodic overview and fabrication

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Abstract: The most generally utilized strategies for transdermal delivery of the drugs are hypodermic needles and creams. Even though having high bioavailability hypodermic needles are less accepted by the patients due to pain occurred by them. Different topical delivery methods have been researched to improve the permeation of drug through skin like transdermal patches and microneedles. Skin is made up of different layers which serves as a major barrier for delivering the drug through topical route. Microneedle technique is developed which can successfully deliver the drug into the systemic circulation across the skin membrane by creating micron size pore into the skin layer that led the drug directly into the systemic circulation. Silk fibroin has been demonstrated to be a material appropriate for biomedical applications because of its biocompatibility and biodegradability, affirmed by the FDA. Silk fibroin has been utilized as a carrier for wide range of therapeutic drugs including potent drugs, biological drugs and proteins. This review focus on the brief overview of microneedles fabrication methods, application of silk fibroin in microneedles for transdermal drug delivery. Micro needling technique is being used to various drugs; however, it needs to experience various challenges before it can enter to the market.

Keywords: *Skin barrier, microneedle technology, silk fibroin, drug delivery, gene delivery.*

PT/ST1/00114

Formulation and Evaluation of Poly Herbal Anti Inflammatory and Analgesic Transdermal Patch

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Abstract: TDDS (transdermal drug delivery system) improve beneficial value and drug safety by further site definite the way and temporal position in the body's vital to reduce the number and size of doses necessary to achieve. A Transdermal Patch is an adhesive patch that has a coating of medicine (drug) that is placed on the skin to deliver specific dose of the medicine (drug) into the bloodstream over a period of time. Some herbal agents through transdermal route. The main principle of developing unconventional drug delivery technologies is to offer more convenience for patients and increase the effectiveness and protection of drug. The aim of the present review, formulation of ploy herbal (***Solanum nigrum* and *Cajanus cajan*)** transdermal patches incorporating herbal drug components. ***Solanum nigrum* Linn. (Solanaceae)** is commonly known as 'Black nightshade', has been extensively used in traditional medicine in India and other parts of world to cure liver disorders, chronic skin ailments (psoriasis and ringworm), inflammatory conditions, painful periods, fevers, diarrhoea, eye diseases, hydrophobia etc. ***Cajanus cajan* L (fabaceae)** is an important indigenous plant with a lot of traditional importance and has analgesic and anti-inflammatory property of aqueous extract of the leaves of plant.

Keywords: *Cajanus cajan, Solanum nigrum, analgesic activity, anti- inflammatory, aqueous extract*

PT/ST1/00115

PREPARATION AND CHARACTERISATION OF ZIRCONIUM OXIDE NANOPARTICLES BY SOLUTION COMBUSTION METHOD

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Abstract: This work aims to formulate Zirconium oxide nanoparticles by using various reducing agents mainly from herbal sources. Zirconium oxide nanoparticles were biosynthesized by a safe and eco-friendly method, the green synthesis method i.e., the solution combustion method. The extract of plants like ***Azadirachta indica, Eugenia caryophyllus, and Curcuma longa*** was used as fuel in different proportions. The presence of different functional groups in plant extracts acts as a reducing agent. The formulated nanoparticles are characterized for particle size, transmission electron microscope (TEM), Fourier transform infrared spectroscopy (FTIR), and X-ray diffraction technique. The particle size of the formulations A to D was found to be in the range of 50 – 100 nm. Sample B had the optimum particle size of 50 nm. TEM showed that obtained zirconium nanoparticles were spherical with a smooth surface. FTIR investigation confirms that the functional groups found similar to that of the standard peak of Zirconium oxide nanoparticles. The X-ray diffraction pattern confirmed the tetragonal phase and crystallinity of zirconium oxide nanoparticles.

Keywords: *Zirconium oxide, Solution Combustion, Green synthesis, Reducing agent*

PT/ST1/00117

Formulation and Evaluation of Bioadhesive Microparticulate System for Intravaginal Drug Delivery of Tenofovir Disoproxil Fumarate

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Abstract: TDF loaded bioadhesive chitosan microparticles intended for Pre-exposure prophylaxis (PrEP) were prepared as an intravaginal drug delivery system to overcome the limitations of conventional oral dosage forms. Chitosan microparticles of TDF were prepared using emulsification-internal gelation technique at varying drug: polymer ratios of 1:1 to 1:4 (ECH-1 to ECH-4). Scanning electron microscopy of microparticles revealed that they are spherical in shape. Differential laser scattering analysis using Malvern Zetasizer indicated that particle size decreased with increase in drug: polymer ratio. 68.93 ± 1.76% of TDF was entrapped in the chitosan microparticles (ECH-4). FTIR results suggested an electrostatic interaction between TDF and chitosan. DSC and XRD studies suggested that the drug may be present in the molecular as well as microcrystalline state in the matrix, which could also explain the sustained drug release from the microparticles. *Ex vivo* bioadhesion studies using mucosa as a substrate indicated that 49.66 ± 8.38 % particles were retained with ECH-4 at the end of 6 h. *In vitro* drug release from the optimised formulation in simulated vaginal fluid indicated TDF was released in a sustained manner as 83.07 ± 7.29 % drug released by the end of 24 h. Thus, the formulated bioadhesive microparticles for intravaginal drug delivery system for PrEP is a promising new strategy and alternative to conventional route of delivery.

Keywords: *Bioadhesive microparticles, Chitosan, Vaginal delivery, Tenofovir, Sustained release.*

PT/ST1/00118

ROLE OF FLUVASTATIN SODIUM LOADED POLYMERIC NANOPARTICLES IN THE TREATMENT OF HYPERLIPIDEMIA: FABRICATION AND CHARACTERIZATION

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Abstract: The present work is focused on the background of formulation and evaluation of polymeric nanoparticles loaded by Fluvastatin sodium. This drug has many disadvantages like bioavailability up to 24 to 44% and half-life approximately about 30 min to 1hrs and also comes under BCS class III but it is sparingly soluble in water. Polymeric nanoparticles were prepared by using gum rosin and chitosan as polymers which were prepared by Solvent Evaporation and Inotropic Gelation method. Prepared polymeric nanoparticles were characterized for respective parameters like % DEE, particle size, zeta potential, Differential Scanning Calorimetry, X-Ray Diffraction, Scanning Electron Microscopy, Transmission Electron Microscopy, In vitro and In vivo drug release study.The average Particle size was lied within the range of 271nm to 313.3nm for SE method and123.3nm to 382nm for IG method. DEE of SE3 was found to be 86.1% and IG3 had 70.2%. In vitro release study showed sustained action for both methods at end of 48hrs; an increase in the polymer resulted in a decrease in the drug release. From the study, it can be concluded that prepared polymeric nanoparticles from both methods show significant hypolipidemic activity. Stability studies showed formulations are stable at the end of 3 months.

Keywords: *Fluvastatin sodium, SE method, IG method, DEE, and Polymeric nanoparticles*

PT/ST1/00119

Formulation and evaluation of antifungal drug loaded transethosomal hair gel

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Abstract: In this study transethosomes were formulated and evaluated for the evaluation of different parameter. Clotrimazole is an antifungal drug used for the formulation of transethosomal hair gel also it has anti dandruff property. Hair is the part of our body which plays a main role in beautification. Dandruff is one of the most common problem now a days this formulation shows a good anti dandruff activity. Hair gel is one of the product which is used for both beautitification and for the medicinal purpose. Transethosomes appear to be more promising since they contain both lipophilic and hydrophilic areas and can accommodate medicinal molecules of various solubilities. Transethosomes can deform and pass through a 5 to 10 times smaller restriction than their own diameter. This great deformability allows intact vesicles to penetrate more easily. This formulation satisfies the required evaluation parameters and HG1 showed a good result in all the evaluation parameters. such as melting point was found to be 148.20° C by differential scanning calorimetry (DSC) method, pH was found to be 7,drug content was found to be 98.45%, entrapment efficiency was found to be 83.89%, constant values observed in the diffusuion studies, showed a good washability, spreadability was found to be 13.5gcm/sec, nano tracking particle was found to be 130 nm, zeta particle size was found to be -49.8 mV ,Viscosity was found to be 14221 m^2/s.The drug excipient compatability studies like FTIR spectroscopy , DSC were studied.

Keywords: *Transethosomes, hair gel, evaluation of hair gel,dug content, UV Calibration,entrapment efficiency,FTIR, Drug content, viscosity.*

PT/ST1/00120

Formulation of Film Forming System of Zaltoprofen for Transdermal Drug Delivery

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Abstract: The purpose of this study was to formulate and evaluate a film forming system (FFS) of Zaltoprofen (ZLT) to minimize the side effects associated with oral use of NSAIDs and improve patient compliance. FFS were prepared by solvent evaporation technique using various polymers, Hydroxypropylcelullose (HPC-EF), Eudragit L-100, Polyvinylpyrrollidone (PVP K-30) and Kollicoat MAE 100P in different ratios (5% & 10%). The developed FFS were characterized by Fourier transform infrared spectroscopy (FTIR), differential scanning calorimetry (DSC), X-ray diffraction (XRD) and scanning electron microscopy (SEM). The formulations were uniform, clear in appearance and had a drying time in the range of 1-5 min. SEM revealed that smooth and transparent films were formed. The FTIR spectra suggested drug-excipient compatibility. XRD and DSC studies indicated that the ZLT was present in amorphous state in the film. According to *ex vivo* permeation studies, the amount of drug permeated across the porcine skin using Franz Diffusion cells (FDC) in case of 5% Kollicoat MAE 100 P was 145.80 ± 67.00 µg/cm^2 which was almost 5 folds more than 5% drug solution. 2.55 ± 0.62 µg/mg of the active was also retained within the skin compared to other formulations and 5% alcoholic solution of ZLT. Therefore, the results obtained with the developed formulation were promising and necessitates *in vivo* studies to be performed.

Keywords: *Film forming system, Transdermal drug delivery, NSAIDs, Zaltoprofen, Kollicoat MAE 100P*

PT/ST1/00121

Formulation and Evaluation of Pharmaceutical Lollipop

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Abstract: A Mouth ulcer also termed as oral ulcer or a mucosal ulcer that occur on the mucus membrane of the oral cavity. For the treatment of mouth ulcer, riboflavin lollipop is used because conventional dosage forms like tablet and capsule have some limitation in case of paediatric patients for example bitterness of tablet and they can't swallow the conventional dosage forms. The medicated lollipop enhance bioavailability, enhance the retention time of the dosage forms which also overcomes the gastric irritation. The Riboflavin lollipop were formulatedby heating and congealing method using excipients. The formulated lollipop were evaluated for both pre-co pression and post- compression parameters as per requirements of standards.

Keywords: *mouth ulcer, oral cavity, riboflavin lollipop, paediatric patients, heating and congealing method.*

PT/ST1/00122

Formulation of Transdermal patches of isosorbidedinitrae

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Abstract: Transdermal drug delivery systems is an alternative route for administering medications. It allows pharmaceutical to delivered across skin barrier and also it avoids first pass metabolism.Transdermal patches are painless convenient and offer multi day dosing,it generally accepted that it's associated with improved patience compliance. Isosorbide di nitrate is medication used for heart failure, esophageal spasm and to treat and prevent chest pain. Long-acting nitrates can be useful as they are generally more effective and stable in short term. Material used in this formulation are Isosorbide Di nitrates, polymers, penetration enhancer, plasticiser, solvents.

Keywords: *transdermalpatches, isosorbidedinitrate, heartfailure, polymers, plasticizer*

PT/ST1/00123

Formulation and evaluation of medicated chewing gum

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Abstract: The aim of study is to formulate and evaluate medicated chewing gum by using vitamins having mouth ulcer actions. Mouth ulcers are very common, and they occur in association with many diseases. Common cause of mouth ulcer includes nutritional deficiencies such as iron, vitamins especially B12 and C. The medicated chewing gum was formulated by different excipients such as sucrose, Dextrose, calcium carbonate, glucose, glycerin, sorbitol, menthol and gum base is used. Various vitamins such as riboflavin, folicacid, niacin, ascorbicacid is used as a drug in the formulation. They are prepared by melting method. Melting gum base at 60°-70°c mixing all other ingredients to the mass after removing from heat and rolled in a calcium carbonate. The formulation evaluated in preformulationstudy, physicalevaluation, uvanalysis, mucus irritation study, sensoryevaluation, taste masking study, invitro drug release, pharmacokinetic order of release and HPLC. The medicated chewing gum undergoes feedback shows 98.52% drug release at 30 minutes in formulation (F2) achieve the purpose to treat mouth ulcer.

Keywords: *mouthulcers, medicated chewing gum, vitamins, riboflavin, melting technique.*

PT/ST1/00124

Topical formulation and evaluation of Tacrolimus gel

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Abstract: The term 'Gel' was introduced in the late 1800 to name some semisolid material according to their physiological characteristics rather than molecular composition. Gel preparation are used to enhance the human appearance.The main aim of the present research was to formulate the gel for the purpose of whitening,moistening, nourishing, lightening and main to treat the virtiligo skin disease.In this study we use active ingredient is Tacrolimus to formulate a pharmaceutical gel.The evaluation of all formulations (F1to F6) .F2 showing 99.81Plus or minus 0.044 drug content .Thus gel formation is safe to use was proved and it can be used as the provision of a barrier to protect skin . Experience with systemic biological therapies that Target cytokines such as in psoriasis suggests that a similar approach might be successfully used in vitiligo.

Keywords: Tacrolimus, vitiligo,Gel, psoriasis,

PT/ST1/00125

Formulation and evaluation of Senna alata topical spray for fungal infection

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Abstract: The present study was carried out in order to formulate and evaluate sennaalata(L.)Roxb topical spray for fungal infections. Senna alata belongs to the family Fabaceae. It has the name "candle bush" owing to the framework of its inflorescence. The fresh whole plant has been collected and used in the formulation. Topical spray has various advantages over other formulation like avoidance of first pass metabolism ability to deliver drug more selectively to specific site. The topical spray was formulated by using different excipients such as citric acid, ,methyl paraben, acetone, isopropyl alcohol and plant(sennaalata) extract has been obtained by successive soxhlet extraction with ethanol 90%.The formulation were evaluated for there pH, viscosity, density, flame extension, spray angle, leakage test and drug content. Aspergillusflavus and penicillum species used as a model fungus to evaluate the antifungal activity of the prepared formulae. The zone of inhibition of A.flavus is 18±6mm and penicillum species is 22±3mm.The diffusion studies indicated that the permeation of sennaalata formulation through the skin was much higher as compared to the diffusion of simple organic solution of the drug

Keywords: *sennaalata(L.)Roxb, Topical spray, Antifungal, Aspergillusflavus, penicillum species*

PT/ST1/00127

Development and Evaluation of Pregabalin loaded N- Trimethyl Chitosan Loaded Microspheres for Intranasal Administration

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Abstract: Although, pregabalin shows high oral absorption, its delayed transport across the blood-brain barrier limits the use in emergency epileptic seizures. Due to the particular anatomical features of the nasal cavity, intranasal (IN) administration has been explored as a means of preferential drug delivery to the brain. The objective of the present study was to improve therapeutic efficacy through IN administration of pregabalin- loaded N-Trimethyl Chitosan (TMC) mucoadhesive microspheres by ionotropic gelation method. Firstly, TMC was synthesized by reductive methylation of chitosan and characterized by FTIR, DSC and XRD analysis. The pregabalin loaded TMC microspheres were critically analyzed for appropriate morphological features, particle size, polydispersity index, zeta potential, drug entrapment efficiency, thermal behavior, in vitro drug release, mucoadhesive nature and biocompatibility studies in excised goat nasal mucosa and further evaluated for ex vivo permeation of drug through nasal mucosa. The microspheres showed the particle size of about 10.71 µm which is ideal for nasal drug delivery. The microspheres showed good spherical shape, uniform distribution of particle size and fine flow property. Swelling index and percent bioadhesion results indicated that microspheres prepared with TMC can effectively decrease ciliary clearance rate and increase residence time of formulation at the nasal mucosa. Prepared formulations were biocompatible with nasal mucosa as evaluated by histopathological studies. In vitro drug diffusion (98.15 ± 2.97 %) and ex vivo drug permeation (94.21± 1.32%) studies indicate successful formulation of microspheres. Thus, the formulation of pregabalin loaded TMC mucoadhesive microspheres offers promising advantages over conventional dosage forms

Keywords: *Epilepsy, N-trimethyl Chitosan, Pregabalin, Mucoadhesive microsphere, Intranasal administration.*

PT/ST1/00128

Development and characterization of raft forming in situ gelling system of neratinib anticancer drug using 3^2 factorial design.

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Abstract: Neratinib diminishes the risk of breast cancer by reducing proliferation of cell by inhibiting the cell cycle regulatory pathway and it is an irreversible inhibitor of pan-human epidermal growth Receptor (HER-2). It shows least oral bioavailability at alkaline pH resulting in diminished therapeutic activity in gastrointestinal tract.The goal of the current study is to design an oral raft-forming in-situ gelling system consisting of neratinib to enhance gastric retention, release the medication in a controlled way, and remain float in the stomach.In the current study, the solubility of neratinib was enhanced by using PEG solid dispersions and an in-situ gelling system was developed and optimized by using two-factor at three-level (3^2) factorial design and was analysed to study the impact of two independent variables that are viz sodium alginate [A] and HPMC K4M [B] on the responses such as floating lag time, % water uptake at 2h and % drug release at 6h and 12h.The formulation with a ratio of 1:3 showed the maximum solubility among various solid dispersion prepared by using Polyethylene Glycol (PEG 6000). The FT-IR spectra illustrated that there were no distinct interactions between drug and the polymer. The percentage drug content in the formulation is ranges from 96.22±1.67% to 97.70±1.89. The developed in-situ gel formulation showed immediate gelation and retained for a longer period and also exhibited a pH value of approximately 7. From the obtained results of factorial designs, it was observed that all the selected factors had a significant effect on the chosen response, supporting the precision of design employed for optimization.The developed oral raft forming in-situ gelling system of neratinib can be a promising and alternate approach to enhance retention in the stomach and sustained release of drug by floating in the stomach and thereby augmenting therapeutic efficacy of neratinib.

Keywords: *oral raft, in-situ gelling system, solid dispersion, breast cancer, neratinib, 3^2 factorial design, sodium alginate, HPMC K4M.*

PT/ST1/00129

Development & Characterization of Fluconazole Loaded Transethosomes for the Treatment of Fungal Infection

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Abstract: Topical drug delivery may offer an alternative to the delivery of drugs because it avoids the problems of gastrointestinal intolerance, avoids first-pass liver metabolism, and eliminates the need for intravenous access. One of the most promising and recent techniques for the enhancement of skin permeation of drugs is the transethosomes and nanoethosomes-based topical or transdermal formulations. A vesicular system like liposome has shown inefficiency to cross the layers of skin. Then transethosomes and nanoethosomes are employed for delivering drugs into the deeper layer of skin. Nanoethosomes and transethosomes have the same composition which is water, ethanol, and phospholipid. Transethosome contains edge activator additionally. Due to the presence of ethanol and edge activator, it displayed enhanced skin permeation. The vesicular system gives better patient compliance. Many studies have shown that transethosomes and nanoethosomes formulations possess improved transdermal and dermal delivery properties both in vitro as well as in vivo. It is expected that the skin penetration of the drug will increase with the help of trans-ethosomes. The entrapped drug in transethosome can facilitate localized delivery of the drug and improve the availability of the drug by means of a controlled release pattern which can advance the treatment of superficial/cutaneous fungal infection. The comparative study showed that the skin permeation of transethosomes is more than liposomes and ethosomes and superficial fungal infection treated by transethosomes showed better results than liposomes and ethosomes.

Keywords: *Transethosomes, Edge activator, Nanoethosomes, Cutaneous fungal infection.*

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Development and evaluation of oral fast dissolving tablet containing Aripiprazole solid dispersion

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Abstract: The advent in pharmaceutical synthesis via computer-aided techniques leads to several therapeutic agents with low solubility issues. Aripiprazole is a biopharmaceutics class II drug used to treat schizophrenia and bipolar disorders. The non-cooperative nature of schizophrenic agents leads a path to oral fast dissolving tablets in such conditions. Now the challenge is preparing a fast-dissolving tablet of Aripiprazole due to its solubility issues. Therefore, the objective of the work was to convert Aripiprazole into a solid dispersion via a spray drying process and further present it as an oral fast dissolving tablet for improving patient compliance. The solid dispersion of the drug in mannitol was prepared via the solvent evaporation method. The solution was further spray dried to form porous amorphous solid dispersions. The spray drying trials were optimized using a custom design approach via Design expert software version 13. Oral fast disintegrating tablets containing optimized solid dispersion were prepared. The tablets were evaluated for tableting properties, *in vitro drug* release profile, and pharmacokinetic profile compared to Aripiprazole. The optimized solid dispersion exhibited a 20-fold increase in the solubility compared to pure Aripiprazole. The tablet disintegrated in 20 seconds. The *in vitro* drug dissolution showed a 25-fold increase in drug release profile compared to pure Aripiprazole in one h. The pharmacokinetic profile indicated a larger area under the curve [AUC] shorter tmax than the pure drug. The stability studies for six months assured stability of the tablet. In conclusion, the approach may help treat schizophrenic patients.

Keywords: *Fast dissolving, Solid dispersion, amorphous, Aripiprazole, spray drying*

PT/ST1/00131

Design, Development and Evaluation of Artemisinin Solid Lipid Nanoparticle

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Abstract: Conventional Drug Delivery System being a classical methods for the delivery of drug into the body, it has wide range of drawbacks. Hence Novel Drug Delivery System is incorporated to overcome those drawbacks by using a combination of advanced technique and new dosage forms. In nanotechnology, nanoparticles are gaining importance and one such form is Solid Lipid Nanoparticle.The are usually solid colloidal sized from 30-100nm. In today's modern world, Solid lipid nanoparticles (SLN) are at the forefront in the field of nanotechnology with several potential applications in drug delivery. Artemisinin is an antimalarial drug derived from the sweet wormwood plant, Artemisia annua.But the effective use of Artemisinin is limited by poor water-solubility, poor pharmacokinetic profile and unsatisfactory clinical outcome especially in monotherapy. To reduce such limitations, artemisinin is reformulated into solid lipid nanoparticles so as overcome the limitations. Artemisinin solid lipid nanoparticles were prepared by hot homogenization technique using high speed homogenizer. The prepared Artemisinin solid lipid nanoparticles were evaluated for their particle size, drug content, zeta potential, encapsulation efficiency, SEM analysis, in vitro drug release. Based on the results of Artemisinin solid lipid nanoparticles (ASLN1-ASLN5) formulation ASLN5 was selected as the best formulation in which the particle size was 225.4 nm, and the entrapment efficiency was 89.64%. The in vitro % drug release of ASLN5 formulation was 98.72 % and it was found to be suitable formulation for the treatment of Malaria. Hence the newly formulated controlled release solid lipid nanoparticles loaded with Artemisinin may be ideal and effective in the treatment of Malaria which releases Artemisinin continuously for 24 hrs in order to maintain the steady state blood level concentration of drug.

Keywords: *Nanotechnology, Solid lipid nanoparticles, Artemisinin, Hot homogenization technique, Steady state concentration.*

PT/ST1/00132

Development and Characterization of Dual pH-Sensitive Liposomes for Breast Cancer Targeting

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Abstract: The development of PEGylated dual pH-sensitive liposomes by fabrication of an acid sensitive PEG polymer, as well as to investigate the ability of formulation for endosomal escape and increase the circulation time. The surface functionalisation of dual pH sensitive liposome was performed by anchoring with mannose as a ligand and then shielding the mannose anchored pH sensitive liposome with pH sensitive material CHEMS-Hz-B-PEG-B-Hz-CHEMS using paclitaxel as a standard drug. The uptake and endosomal escape of the formulation were investigated in breast cancer cell (MCF7). The formulation showed accelerated drug release at the pH of endosomal environment (pH 5.0) and also showed increase in intracellular paclitaxel concentration and higher cytotoxicity.

Keywords: *Dual pH sensitive liposomes, Breast cancer, Shielding, PEGylation, Mannose. Macrophages.*

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FORMULATION AND EVALUATION OF LOCAL ANAESTHETIC PATCH CONTAINING LIDOCAINE FOR TO TREAT THE NEEDLE SCAR

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Abstract: Local anesthetic that is used to numb the surface of a body part for relieve pain (any area of the skin, inside of the nose, ear or throat, and the genital area). Topical anesthetics are available in creams, ointments, aerosols, sprays, lotions, and jellies. In the present investigation, lidocaine patches have been formulated in view to help Trypanophobia state. Trypanophobia is a condition having intense fear towards procedures involving parental administration. Trypanophobia found in few adults and commonly in children's, in view local anaesthetic patch has been found beneficial. Lidocaine transdermal patches were developed and tested towards its efficacy to abolish the pain.In this study the formulation was done by using different base polymer(pullulan), hard paraffin, cocoa butter. Each formulation contains lidocaine of 5 % concentration. 12 Twelve Guinea pig (5-6 weeks) weighing 250-350 gm were selected for the study. Three groups, each groups containing 2 division, each division contains 2 Guinea pig utilized to study the local anesthetic activity of the formulation. Each formulation was done after 2days.The evaluation study was carried out for pH, thickness of the film, stability studies, IR for each ingredient used and for the 4 formulation and animal studies were carried out.Results found to satisfactory for the hard Paraffin than the others, coca butter showed rancidity after 3 months and polymer showed the activity after 1hour but the formulation done by using hard Paraffin showed within 10 seconds. There are products for local anesthetic patch containing lidocaine but these products were too expensive to the common man.

Key words: *Lidocaine, Transdermal Patch, Needle Scare.*

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Combined Effect of Curcumin Nanoparticles with Cefuroxime Nanoparticles Against Resistant Microorganisms

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Abstract: Antibiotic metal complexes and green synthesized nanoparticles are gaining recognition due to their efficacy against resistant microorganisms. The present study was outlined to synthesize and study the effect of curcumin nanoparticles on cefuroxime nanoparticles against resistant microorganisms. Cefuroxime and curcumin nanoparticles with silver, palladium, cadmium, nickel, and zinc were synthesized and characterized for UV, FTIR, FESEM, EDAX, and XRD. Antibacterial studies were performed against normal and resistant bacterial strains. Color and pH changes in synthesized nanoparticles indicate the reduction of metal ions, which confirms the formation of nanoparticles. The UV spectrum of cefuroxime nanoparticles has shown the change of absorbance from λmax 276.2nm and curcumin nanoparticles exhibited a gradual increase in the absorbance, accompanied by a shift in the wavelength from 439 to 258.4 nm. The frequency of the O-H group of curcumin and the carboxyl amide group of cefuroxime in the nanoparticles was shifted in FTIR analysis, which confirmed the formation of nanoparticles. FESEM images of Cefuroxime and Curcumin silver nanoparticles exhibited circular shapes and sizes in the range of 27.3–47nm and 33.2–52.2nm, respectively. The EDAX spectrum indicates the presence of carbon, zinc, oxygen, sulphur, chloride, nitrogen, zinc, and silver, which confirms the formation of nanoparticles. XRD analysis indicated the crystal structure of nanoparticles. Cefuroxime and curcumin nanoparticles with palladium, cadmium, zinc and their (1:1) combinations exhibited potential antibacterial activity against resistant strains of *Klebsiella pneumonia* and *Escherichia coli* in comparison with cefuroxime. This indicates the synergistic effect of curcumin nanoparticles with cefuroxime nanoparticles against resistant microorganisms. An acute toxicity study on rats indicated no clinical changes in the histopathology of the liver and stomach, indicating the safety of synthesized nanoparticles.

Keywords: *Cefuroxime, Curcumin, Nanoparticles, Resistant Microorganisms, Acute toxicity*

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Ranipill – First Human Use Robotic Pill In Chronic Condition

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Abstract : The purpose of the "ROBOTIC RANIPILL - Enteric coated capsule with tiny needles" is to displace inconvenient injections with a pill which is made to defend itself in an acidic environment and decrease Gastro intestinal comfort, as prior research has shown that biologics are digested in the Gastro intestinal This capsule is a pharmaceutical technology of protecting biologic medication , Preclinical and clinical research shows that Ranipill has a high bioavailability and is built to introduce big molecules at a rate that is 500% higher than customary. The Rani pill is specifically designed to treat chronic disease conditions with a greater dose of medication and oral biologic delivery, which leaves room for the development of new biosimilar products. The results showed that the capsule did not feel like it was deploying or inflating, indicating that the test had been passed successfully. Anatomy, physiology, and biochemistry are combined with engineering, chemistry, and materials science in this ground-breaking innovation to turn injectable medications into pills.

Key Words ; *Robotic, G.I tolerance , biologics , biosimilar, chronic condition ,Bio- availability*

PT/ST1/00140

FORMULATION AND EVALUATION OF SERICIN INSPIRED DENTURE ADHESIVE GEL

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Abstract: The use of denture adhesive is common among denture wearers, and it is also prescribed by many dentists. Prescribing denture adhesives has been viewed by many prosthodontists as a means of compensating for any defects in the fabrication procedures. Denture adhesives add to the retention and thereby improve chewing ability, reduce any instability, provide comfort and eliminate the accumulation of food debris beneath the dentures. Consequently, they increase the patient's sense of security and satisfaction. It is applied to the fitting surface of the denture. In the mouth, with the presence of water from saliva, the material swells and creates an adhesion between denture and the gum that improves the retention and stability of denture wearing patient.The sericin denture adhesive gel was prepared by dissolving the required quantity of sericin, N-acetylated chitosan and carboxymethyl cellulose in 20ml of water under constant stirring at 500rpm on a magnetic stirrer.The pH of the gel was found to be 6.6, close to the average pH of the mouth. The tensile strength was 18 ± 0.9 Pa (standard deviation), which was sufficient to hold dentures and showed better retention. EDS analysis indicate the presence of areas displaying a clean PMMA plate surface, highlighted by an absence in Na and areas still coated with the adhesive. This confirms that failure occurs at the interface with the PMMA, leaving areas of the PMMA surface covered by the adhesive. The gel was easily squeezable from the aluminium tube. The swelling of the gel was considerable and increased volume of the hydrophilic ingredients (CMC) allows filling of the cavities and spaces between the denture material and the oral gingiva. The microbial tests showed significant antibacterial and antifungal activity.The results reveals that the developed sericin denture adhesive gel shows sufficient retention force, antibacterial activity, antifungal activity, can be easily squeezed off the tube and washed away.

Keywords: *Denture adhesives; Denture fixative; Denture; Sericin;*

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FORMULATION AND EVALUATION OF PHYTOSOMES FOR PSORIASIS

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Abstract: Psoriasis is an autoimmune disorder of the skin with repeated episodes of inflammation and hyperkeratosis. Therefore, Psoriasis is called an itching disease. Psoriasis affects 2.5% of the world's population. The aim of the present work was to formulate and evaluate phytosomes for psoriasis. Pongamia pinnata has been reported to show antipsoriatic activity and was chosen to formulate phytosomes. Pongamia pinnata contains a number of flavones, sterols and chalcones. Phytochemical examination of this plant indicated the presence of furanoflavones, furanoflavonols, chalcones, flavonoid glucosides. Collection, Identificatiion and Authentification of Pongamia pinnata leaves was carried out. Extraction process involved use of plant leaves using by Soxhlet extraction to obtain hydroalcoholic extract. Further characterization of extract was done by UV analysis, phytochemical screening, Thin layer chromatography. Phytosomes of the extract were further formulated using thin layer hydration method. Phytosomes thus obtained were evaluated for morphology, particle size, zeta potential, entrapment efficiency & drug content. The optimized formulation was further processed to Phytosomal gel using Carbapol 934. The hydroalcoholic extract showed presences of alkaloids, carbohydrate, flavonoid, Saponins & amino acid. Phytosomes vesicle and formulation was found to be spherical. Particle size obtained was 6.197 µm, Zeta potential was found to be -6.71m, drug content was 86.05% and Entrapment Efficiency was up to 90.59%. It can be concluded that the Phytosomes containing *Pongamia pinnata* phytoconstituents can provide a convenient safe and efficient carrier to deliver the herbal extract and alternative to dosage form

Keywords : *Pongamia pinnata, psoriasis, liposomes ,skin.*

PT/ST1/00142

DESIGN AND CHARACTERIZATION OF RUTIN LOADED PHYTOSOMAL DELIVERY FOR BREAST CANCER

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Abstract: The major drawback of the current cancer therapy strategies is the inability to deliver specific drug to the target, causing the drug to affect both healthy and cancerous cells alike. Most drugs used in conventional therapeutic strategies have low solubility, high metabolism and are hydrophobic, making them biologically unavailable leading to systemic toxicity. The development of Nano medicine increases the possibility of specific targeted delivery, which overcomes tumor barriers. Rutin is widely used in the treatment of cancer and enhancing the immune response. Among different novel drug delivery systems, phytosomes are well-known as biocompatible nanocarriers that have been used to improve solubility and permeability of different phytopharmaceuticals. In the present study, the response surface methodology i,e. Central Composite Design was successfully employed for the optimization of Rutin loaded phytosomes. All the phytosomal formulation were evaluated the entrapment efficiency by ultracentrifugation method. In present study, different ratio as 100 mg, 150 mg, 200 mg of phospholipid used, so in which at ratio 200 mg found optimum % Entrapment efficiency in Rutin. The %EE of different batches was in a range 80.26 to 99.62 % of Rutin respectively. In vitro release studies are carried out by dialysis through a semi permeable membrane. Release kinetics showed the matrix model as best fit model and release was significant change (p 0.05). Ex-vivo screening of anticancer activity was done by cell line study. Cell line study was performed on (MCF-7) is a human breast cancer cell line for anticancer activity of Rutin loaded phytosomes.

Keywords: *Rutin, Phytosomes, Central Composite Design, Breast cancer, Release kinetics*

PT/ST1/00143

DEVLOPMENT AND EVALUATION OF IN-SITU MUCOADHESIVE GEL OF LAMOTRIGINE FOR INTRANASAL ADMINISTRATION

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Abstract: The present study was aimed at developing temperature sensitive in situ gel for intranasal administration of lamotrigine, an anticonvulsant drug used to treat generalised and partial seizure. Pluronic 127, chitosan and β-glycerophosphate were used for the preparation of gel in varying concentration by cold method. These systems were characterized for physical properties such as pH, gelling temperature, gelling time, drug content, in vitro drug diffusion studies, ex-vivo drug permeation and histopathological studies. The drug polymer compatibility was studied using Fourier transform infrared spectroscopy. All the prepared formulations gelled immediately below 25 sec at the nasal pH and temperature. Addition of chitosan with Pluronic 127 increases the mucoadhesion and contact time of formulation in nasal cavity. The result of in-vitro drug release study revealed 93% of Lamotrigine and 75.33% of drug release in ex-vivo permeability study from the optimized formulation in about 210 min. Result of histopathological studies suggests the suitability of prepared formulation for intranasal administration. In-situ intranasal gel of lamotrigine prepared by using Pluronic 127 and chitosan demonstrated gelation at body temperature and exhibited satisfactory release of drug from its dosage form. It can be concluded that the prepared formulation has potential for the intranasal administration of lamotrigine in the treatment of epilepsy.

Keywords: *In-situ gel, Mucoadhesive, Intranasal administration, Lamotrigine*

PT/ST1/00144

OPTIMIZATION AND CHARACTERIZATION OF SUPERDISINTIGRATING PROPERTY OF *SALVIA HISPANICA (CHIA)* SEED MUCILAGE.

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Abstract: Natural excipients have wide applications in the pharmaceutical industry which may be attributable not only to the fact that they are biodegradable and toxicologically harmless. Gums and mucilages are the most commonly available plant ingredients with a wide range of applications in pharmaceutical and cosmetic industries. The objective of the present investigation was to carry out optimization and characterization of Pharmaceutical Excipient Properties of *Salvia hispanica* Seed Mucilage. The extraction of the mucilage carried out by soaking the chia seed in distilled water for 24 hours. The water: seed ratio was optimized by soaking the seeds in water in different ratios i.e. (1:10, 1:20, and 1:40). The optimization of the CS mucilage was carried out by design expert DX V. 12 licence version software using 3^2 factorial designs. The independent were selected as seed water ratio (X1), Temperature (X2) and dependent variable were selected Percent viscosity and Yield obtained. Precompression parameter of CS mucilage like Angle of repose, Bulk density, tapped density, percent compressibility index and Hausner ratio was studied and all parameters results were found within the range. Super disintegrating property of CS mucilage was carried out with Diclofenac as model drug. Tablets were prepared with different concentration of CS mucilage The post compression parameters were evaluated such as Hardness, thickness, friability, disintegration time and wetting time.. The super disintegration time of the CS mucilage was found to be less as compared to the tablets containing sodium starch glycolate.

Keywords: *Salvia Hispanica seed, Chia seed, Super disintegrates, Mucilage, Tablets*

PT/ST1/00145

Optimization and Development of Boswellic Acid Loaded Ethosomal Topical Gel for its Anti-inflammatory activity

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Abstract: Ethosomes are an innovative, inventive, and intrusive carrier vesicle for lipid-based systems made up of several and concentric layers of flexible phospholipid, ethanol, and water. To investigate the overall impact of individual independent variables, such as phospholipid (A1), ethanol (B2), and tween 80, a Box-Behnken design was used. Solvent evaporation was used to make ethosomal formulations containing boswellic acid. Vesicles shape and size , Entrapment efficiency , Zeta potential, Invitro-Release . Preparation and characterization of Boswellic Acid ethosoma gel were carried out by uising Carbopol as a Gelling agent. The prepared Ethosome based gel formulations were inspected visually for their colour, Transparency and smoothness.. The pH of ethosomal gel was determined at room temperature using digital pH meter. The viscosity of ethosomal gel was measured by Brookfield viscometer. Drug content was analysed spectrophotometrically at 210 nm, using UV- spectrophotometer. Ex-Vivo skin permeation Study was done by fran'z diffusion cell. The results indicated that the entrapment efficiency, dug release and drug content were significantly influenced by the variables studied, i.e Phospholipid, ethanol and tween 80 concentration. The prepared Gel also showed better retention on the skin and no irritation. Thus, the drug loaded ehasomal based could be a promising formulation as a topical delivery for anti-inflammatory activity.

Keywords: *Ethosomes, Boswellic acid, Gel, Topical preparation, anti-inflammatory activity, Ex-Vivo skin permeation*

PT/ST1/00146

Design and Development of *Boswelic Acid* Loaded NanoEmulgel Topical Delivery : invitro and *Ex vivo* Characterization

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Abstract: Many widely used topical medications, such as ointments, gels, creams, and lotions, have numerous drawbacks. In addition to having a stability issue, they are exceedingly sticky and cause the patient discomfort. Therefore, an emulsion-based technique is being employed to increase the permeability of medications in order to get around this restriction. Nanoemulgel is a newly developed topical drug delivery technology that will enhance transdermal DDS formulation and development with more topically effective medications. Emulgels are emulsions that have been combined with a gelling agent to form gels, either of the water-in-oil or oil-in-water variety. The objective of this study was to investigate the potential of Nanoemulgel as a topical delivery system to enhance the permeation of Boswelic acid (BA). BA loaded Nanoemulgel was prepared using 3^2 factorial design and was characterized using scanning electron microscopy (SEM), % drug content, and spreadability determination. The prepared BA loaded emulgel showed good spreadability and the pH of all formulation was in the range of 6.2- 7.1 which is considered acceptable to avoid the risk of irritation upon application to the skin. The drug content were found to be uniform throughout the formulated Nanoemulgel. Rheological behavior was studied using viscosity measurements, and a skin irritation test was performed to evaluate the biocompatibility of formulation. The skin permeation study was carried out with rat dorsal skin using a modified Franz diffusion cell. BA loaded nano emulgel showed high drug deposition on excised rat skin; the test showed biocompatibility of formulated emulgel. These results show that BS loaded nanoemulgel as a superior topical application vehicle for BA.

Keywords: *Boswelic acid, Nanoemulgel, Factorial design, Topical , Spreadability*

PT/ST1/00147

FORMULATION AND DEVELOPMENT OF PSIDIUM GUAJAVA EXTRACT BASED TABLETS WITH ANTIDIABETIC DRUG

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Abstract: Aim of the present study is to formulate and evaluate psidium guajava based oral drug delivery system of psidium guajava containing antidiabetic drug. The Objective of present research work is to study the adjuvant properties of psidium guajava and formulate it's tablet dosage form to determine synergistic effect of psidium guajava with metformin on diabetes. Initially identification and extraction of psidium guajava was done followed by it's Preliminary Phytochemical screening of crude extract in which flavonoids especially Quercetin is found as a major component. Development of herbal tablet was done by direct compression method. Evaluation of Precompressional powder and postcompressional tablets was done. Combination of psidium guajava was done with Metformin with the aim of providing maximum therapeutic effect in minimum dose. Diarrhoea is one of the problem associated with metformin can be overcome by psidium guajava as it has antidiarrhoeal activity due to the presence of quercetin, and also due to its cardiotonic activity it used to maintain hypertension induced by diabetes. Based on evaluation of post compressional parameters, formulation (F2) was considered as an optimal formulation, on the basis of drug content and release profile. Herbal tablets can be utilized for suppressing side effects and enhancing positive effects on body.

Keywords: *psidium guajava, myrtaceae, quercetin, diabetes.*

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Preparation and Characterization of Modified Pear Starch as Novel Superdisintegrating Agent

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Abstract: The current investigation was carried out to prepare and characterize the modified pear starch as a novel superdisintegrating agent using sodium starch glycholate as standard in the formulation cetrizine dihydrochloride tablet. Pear starch extracted from fresh pear fruits was treated with anhydrous disodium hydrogen orthophosphate at 130 °C for 3 hrs. Modified pear starch was evaluated for physicochemical properties such as moisture content, swelling capacity, viscosity, compressibility index, flow properties and for superdisintigrating property. Modified pear starch exhibited 3.14% of swelling index, excellent flow properties and good compressibility index. Super disintegration property of it was found to be better than the pear starch i.e. it disintegrated the tablet in about 1.06 minutes. Extraction and modification of pear starch was also confirmed by DSC and FTIR studies. Based on the research carried out it can be concluded that the extracted native starch and modified pear starch can be used as superdisintegrant agent in solid oral dosage forms.

Keywords: *Pear starch, Starch phosphate, Superdisintegrating Agent, Cetirizine dihydrochloride, Modified pear starch*

PT/ST1/00149

Development and Characterization of Orodispersible Tablets - A Combination Strategy of Sumatriptan Succinate and *Tanacetum Parthenium* (Fewerfew) for the Treatment of Migraine

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Abstract: Migraine is a chronic neurological disorder characterized by attacks of moderate to severe headache. Sumatriptan Succinate is FDA approved treatment for migraine with or without aura in adults. Feverfew is traditionally used for the treatment of fever, migraine and headaches. The objective of the present study was to develop orodispersible tablets (ODT) with combination of synthetic and herbal drugs using superdisintegrants and sublimation technique to improve the bioavailability, reduce the dosing frequency and thereby maintaining the therapeutic efficacy. Kyron T114 was used to mask the bitter taste of the drug Sumatriptan succinate. The ODTs were prepared using superdisintegrants such as Croscarmellose sodium, Crospovidone, and Sodium starch glycolate at varying concentrations (2%, 4%, and 6%) by direct compression. The optimized formulation based on least disintegration time (DT) was chosen to reformulate using sublimating agents such as camphor, thymol or menthol at varying concentrations (1%, 2%, 3%) to further reduce the DT. The compatibility of drug with excipients was investigated and the prepared formulations were evaluated for pre and post-compression parameters. The weight variation, hardness, friability, DT and in-vitro drug release was found within specified limit. The formulation with 6% Crospovidone and 2% menthol showed DT of 14 sec and drug release <90% within 5 min hence was considered as optimized formulation. The accelerated stability study and kinetics modelling was performed for optimized formulation. The formulated ODT's were found to be promising with better DT and drug release which will eventually have better efficacy along with averting the issues of bitter taste.

Keywords: *Orodispersible Tablet, Sumatriptan Succinate, Tanacetum Parthenium, Fewerfew, Migraine*

PT/ST1/00150

Design, Optimization and Characterization of Nabumetone loaded emulgel for its anti-Rheumatoid arthritis effect: *in vitro* permeation studies

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Abstract: Rheumatoid arthritis (RA) is a chronic inflammatory systemic autoimmune disease. As there is no cure for RA, the overall goal of first line treatment is to relieve pain, decrease inflammation and slow/ stop the further damage. The oral medications have common side effects like abdominal pain, ulcer and gastrointestinal (GI) bleeding thus the present research work was aimed to develop emulgel of Nabumetone to enhance the drug absorption by topical application, which overcomes the demerits of oral dosage form and conventional gel system. The emulsion formulations were prepared using Light liquid paraffin a soil phase, Tween 80 as surfactant and PEG 400 as co-surfactant. The Carbopol 934, HPMC K 15M were used as a gel matrix to incorporate the emulsion and to improve its viscosity for topical application. The prepared emulsions were characterized for globule size, drug content. The emulsion Q1 with surfactant: co-surfactant ratio2:1 and oil: Smix ratio of 1:9 was found as optimized formulation had globule size of 116nm. The emulgel was prepared by incorporating the optimized emulsion into different concentrations of gelling agents. The prepared formulations were evaluated for physical appearance, drug content, pH, viscosity, spreadability, extrudability and *in vitro* drug release studies and they were found to be within the acceptable limits. The optimized formulation F2 with 2% Carbopol 934 showed *in vitro* drug release of 94.13% at the end of 8hrs. The optimized formulation was found to be stable. The work could be potentially utilized to investigate *in vivo* animal study.

Keywords: *Rheumatoid arthritis, Nabumetone, Carbopol 934, Emulgel, topical delivery.*

PT/ST1/00151

OFLOXACIN LOADED MICROSPHERES RECONSTITUTABLE SUSTAINED RELEASE SUSPENSIONS: FORMULATION AND EVALUATION

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Abstract: The objective of this work was to develop and evaluate controlled released reconstitutabled suspensions of Ofloxacin-loaded microspheres. The resulting microspheres obtained from the emulsion solvent diffusion method were with good % yield and the mean particle size of microspheres ranged from 52.37±1.54µm to 72.45±1.44µm and the encapsulation efficiencies ranged from 83.53±1.42 to 95.25±2.04%. The encapsulation efficiency was also found to be dependent on the amount of polymer used in the formulation. The FTIR and DSC spectra confirmed that Ofloxacin and the polymers used in the formulations have no interaction. The microspheres were porous, smooth, round, and somewhat aggregated, according to scanning electron microscopy. The sustaining impact of microspheres was shown to be dependent on the polymer concentration and amount of cross-linking agent utilized in the formulation, according to in-vitro dissolution investigations. The amount of xanthan gum in the suspension changed the volume of sedimentation. This study suggested that stable suspensions of Ofloxacin-loaded microspheres could be formulated with 0.6 % W/V xanthan gum by the addition of 20% D-sorbitol.

Keywords: Ofloxacin, microspheres, Suspension, Xanthan gum, and D-sorbitol.

PT/ST1/00153

FORMULATION AND EVALUATION OF LIPOSOMES FOR THE TREATMENT OF CERVICAL CANCER

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Abstract: Cervical cancer is the 3rd most common malignancy among women, with approximately half a million freshly diagnosed cases and over 200,000 deaths annually. Although most cases of cervical cancer can be prevented by routine screening and treatment of precancerous lesions. Various preparations have been evaluated for local application to the cervix. The most promising to date is 5-fluorouracil. Fluorouracil is a pyrimidine analog that irreversibly inhibits thymidylate syntheses. Blocking the synthesis of thymidylate which is required for DNA synthesis. Intracellular metabolites of 5-Fluorouracil exert cytotoxic effects by either inhibiting thymidylate synthesis or through incorporation into RNA & DNA, ultimately initiating apoptosis. The objectives of the study were to formulate liposomes containing anticancer agent for cervical cancer. And to characterized prepared liposomes for physiochemical properties and various evaluation parameters such as skin retention, vesicle morphology, vesicle size, drug release and drug entrapment. The 5-Fu liposomal formulation were prepared by modified ethanol injection method, with excipients cholesterol and phospholipon 90H. In the present study, organoleptic properties of 5-FU were performed to confirm the identity and purity of the drug and results were found similar which are reported in the literature. In order to estimate 5-FU, calibration curves were prepared in PBS (pH 7.4) and was found to be linear at 265.6nm.

Keywords: *5-Flurouracil, Cholesterol, Phospholipon.*

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INNOVATIVE APPROCHES FOR CANCER TREATMENT

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Abstract: Cancer is one of the main causes of death worldwide, and in the past decade, many research studies have focused on finding new therapies to reduce the side effects caused by conventional therapies In recent years, research into cancer medicine has taken remarkable steps towards more effective, precise and less invasive cancer treatments. While nanomedicine, combined with targeted therapy, helped improving the biodistribution of new or already tested chemotherapeutic agents around the specific tissue to be treated, other strategies, such as gene therapy, siRNAs delivery, immunotherapy and antioxidant molecules, offer new possibilities to cancer patients. On the other hand, thermal ablation and magnetic hyperthermia are promising alternatives to tumour resection. Finally, radiomics and pathomics approaches help the management of big data sets from cancer patients to improve prognosis and outcome

Keyword: *Magnetic hyperthermia, Radiomics, Pathomics,*

PT/ST1/00155

SOLUBILITY ENHANCEMENT OF ACYCLOVIR BY VARIOUS SOLID DISPERSION METHOD

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Abstract: Aim of the present study is enhancement of solubility of acyclovir by solid dispersion method and comparison of various techniques. Solubility enhancement of poorly water soluble drugs is an important aspect of formulation development. Solid dispersions traditionally have been used to effective methods to improve the dissolution properties and bioavailability of poorly water soluble drugs. Solid dispersion were prepared by melting method, solvent evaporation method, co-precipitation method using PEG 6000, PVP K30 and gum acacia respectively. The FTIR and DSC study revealed no chemical incompatibility between drug and polymers.

The solid dispersion was characterized by % drug content and aqueous solubility. The comparison between the polymers and their respective ratios conferred that PEG 6000 with drug to polymer ratio 1:3 greatly increases the solubility of acyclovir as compared to pure API, marketed preparation and solid dispersion of other polymers.

Keywords: Solubility enhancement, Solid Dispersion, Acyclovir.

PT/ST1/00157

"PULSINCAP OF SELECTED PROTON PUMP INHIBITOR"

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Abstract: The objective of this study was to formulate and evaluate pulsatile device to achieve time release of Pantoprazole sodium microspheres based on Chrono pharmaceutical considerations for the treatment of peptic ulcer. The basic design involves the preparation of cross-linked hard gelatin capsules by using formaldehyde; the capsule shells were made acid stable. The microspheres were made using the emulsion solvent evaporation method, and their compatibility, angle of repose, bulk density, % yield, drug content, entrapment effectiveness, *in-vitro* dissolution research, surface morphology, zeta potential, and kinetic data analysis were all assessed. A compatibility study revealed no contact between the polymer and the sodium pantoprazole. The evaluation of cross-linked gelatine capsules revealed that 10 hours of formaldehyde treatments were enough. The findings showed that the drug content, *in-vitro* disintegration, weight variation, and *in- vitro* drug release of pantoprazole sodium microspheres in pulsincap were95.00±0.43, 6 hours, 0.8500.06, and 93.460.45, respectively. Images from SEM and MZA revealed spherical to circular particles with distinct peripheries. The preparation remained stable during 45 days of storage at 400C, according to a stability analysis. The improved F6 batch of Pantoprazole sodium microspheres, which are used to treat peptic ulcers, were targeted to the colon, according to the results of the current pulsincap formulation research. By treating the gelatine capsule shells, it is possible to achieve drug release over a period of 5–12 hours.

Keywords: Peptic ulcer, Pantoprazole sodium, ethyl cellulose, formaldehyde and microspheres.

PT/ST1/00158

FORMULATION AND EVALUATION OF INTRANASAL MUCOADHESIVE AGMATINE NANOPARTICLES FOR THE TREATMENT OF EPIEPSY

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Abstract: The objective of present study was to develop and evaluate mucoadhesive agmatine nanoparticles for intranasal administration in epilepsy. Chitosan solution, agmatine-phospholipid complex, poloxamer 188 and sodium deoxycholate were used for preparation of mucoadhesive nanoparticles by emulsion-Solvent evaporation method. The drug-polymer compatibility was determined by using Fourier Transformed Infrared Spectroscopy. Prepared nanoparticles were evaluated for various physicochemical properties such as drug content, entrapment and also for bioadesion and biocompatibility studies. The particle size of the formulated Agmatine nanoparticles with 0.2% chitosan and phospholipid found suitable for nasal administration. The prepared Agmatine phospholipid loaded chitosan nanoparticles showed good bioadhesion strength, maximum drug content and drug entrapment efficiency greater than 90%. The values of zeta potential confirm the repulsion among the particles and thereby increases the stability of the nanoparticles. The release of drug from particles was 91.58 ± 2.74 %, which is important for prompt absorption of drug to reach desired drug concentration in plasma after nasal administration. Prepared formulation was also found to be biocompatible and having sufficient bioadhesion potential. Intranasal administration of Agmatine loaded mucoadhesive nanoparticles may be appropriate and valuable drug delivery system for chronic and acute attacks of epileptic seizures.

Keywords: *mucoadhesive, intranasal, agmatine, epilepsy, Chitosan, Emulsion-Solvent evaporation*

PT/ST1/00156

Formulation, Biofilm and Anti-bacterial activity of Cephalexin Doped Carbon Nanoparticle Incorporated Topical Gel

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Abstract: The rise in production of Carbon out of pollution, medical sciences have started re-using the Carbon for treating various diseases because of its versatile character as a molecule. Because of the use of Carbon as a carrier molecule, the characterization of the Carbon Doped Cephalexin nanoparticles is also conducted in this work. The appearance of the gel is ash-black in colour depending on the concentration of Carbon used in formulation. The aim of the present work is to formulate Carbon doped Cephalexin Nanoparticles as topical gel for testing its anti-microbial activity and also to check its mechanism of action with the help of bio-film formation by testing against organisms like Protease, E. coli, and Staphylococcus sp. and Bacillus substilis. The phase 0 of the clinical trials is conducted in this work in order to understand its anti-microbial characteristics. After formulating various batches of the Carbon doped Cephalexin topical gel based on varying concentration of Carbon, CC5 has been able to show the highest property of gel characteristic out of all the batches. Followed by several evaluation tests being conducted including the microbial assay, it was found that CC2(0.15g nanoparticles,0.5g Carbopol) and CC5(0.15g nanoparticles,0.75g Carbopol) showed the highest zone of inhibition, that is, highest anti-microbial activity out of all batches. The formulations have hence proven to show their respective anti-microbial activity against broad-spectrum of microbes with their respective mechanism of action being studied using the bio-film preparation and its ability to rupture the bio-film produced by the microbes.

Keywords: Cephalexin, Carbon nanoparticles, Zero phase, Antibacterial activity.

PT/ST1/00160

FORMULATION AND CHARACTERIZATION OF NANOTRANSFEROSOME LOADED CHLORGENIC ACID

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Abstract: Chlorgenic acid is a polyphenol compound found in coffee beans and different types of coffee, including green coffee. Chlorgenic acid also has various pharmacological activities like anti- diabetic, anti-hypertension, anti-angina, etc. Chlorgenic acid loaded nanotransferosomes for concomitant treatment of hypertension and diabetes due to established pharmacological activity. The aim of the present work is to formulate and characterize nanotransferosome loaded Chlorgenic acid for treating chronic concomitant disease Hypertension and Diabetes. The formulation nanotransferosomes were prepared by thin film hydration technique using phospholipid, tween 80 and cholesterol. The drug was characterized by for preformulatory evaluation and found its suitability for the dosage form. The drug polymer compatibility shows no interactions between the drug and polymer. The calibration curve was found to be linear. A formulation of using various ratios of phospholipid, tween and sonication time as a factor has be prepared. The prepared formulations were characterized for its entrapment efficiency, drug content and vesicle size analysis. The formulations were also examined for its permeation through *invitro* diffusion for 24 hrs. The entrapment efficiency, drug content and *invitro* drug diffusion of the prepared formulation was found to be in the range of 70.08 to 88.33 %, 62.66 to 87.41% and 78.22 to 98.21% respectively. The drug release kinetics found to fit to zero order pattern. Finally, according to the study results, it is concluded that nanotransferosome loaded Chlorgenic acid might be a good approach for the therapeutic activity for concomitant treatment for hypertension and diabetes through transdermal delivery.

Keywords: *Chlorgenic acid, nanotransferosome, hypertension, diabetes*

PT/ST1/00162

Formulation and In vitro Evaluation of Metformin HCl Gastroretentive Floating Tablet.

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Abstract: Metformin is an oral anti-diabetic drug in the biguanide class. It is the first-line drug of choice for the treatment of type 2 diabetes, particularly in overweight and obese people and those with normal kidney function.It decreases hepatic glucose production, decreases intestinal absorption of glucose, and improves insulin sensitivity by increasing peripheral glucose uptake and utilization Plasma half–life of Metformin after intravenous administration, about 1.5 to4 h. Absorption of the metformin HCl is limited to upper part of the GI tract and therefore its bioavailability from both immediate and sustained release marketed dosage forms is 50-60%. So metformin is suitable for gastroretentive drug delivery system, which may improve bioavailability. The purpose of the present study was to develop the floating tablets of Metformin HCl and evaluate the drug release profiles of these formulations.Tablets were formulated using polymers HPMC K100M, Ethyl Cellulose, along with effervescent agents citric acid and sodium bicarbonate. All the formulation were prepared by wet granulation technique. The prepared tablets of all the formulations were evaluated for physical characters like tablet hardness, friability, weight variation buoyancy lag time, total floating time, assay, in-vitro drug release. The main aim was to optimize the formulation for 24 hours in-vitro release and total floating time to more than 24 hours.

***Keywords**: Metformin HCL, Sustained release, HPMC K100M, Eudragit RL100,Floating DDS*

PT/ST1/00163

ADVANCEMENT IN TREATMENT OF ALZHEIMER'S DISEASE USING NANOPARTICLE-BASED DRUG DELIVERY SYSTEMS.

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Abstract:

The aim of the present investigation to formulate targeted formulation with the use polysorbate 80 overcoating on nanoparticles which permits entry to Blood-Brain-Barrier by receptor mediated endocytosis followed by transcytosis. With the use of nanotechnology, there are numerous factors which may overcome such as poor drug absorption, untargeted drug delivery, frequent dosing, higher toxicity profile of drugs etc. Nanomaterials provide alternative approaches to overcome the challenges in drug transport across the BBB. Formulating the polymeric nanoparticle by spontaneous emulsification method and characterized by melting point, UV, FTIR, FESEM, MOTIC, in-vitro drug diffusion, percent yield, drug content, EE, release kinetics, particle size, zetapotential, Stability study, behavioral study performed on STZ induced Alzheimer's disease (AD) rats. Chitosan Nanoparticle (NP) coated with PS-80 of drug agmatine show increased step through latency as compared to other groups its show that our formulated nanoparticles shows effective in treatment of AD. Formulated NP's show particle size is 176 nm, process yield is 85.10 %, Drug content of best batch found to be 90.32%, Entrapment efficiency was 68.40%and drug release was found to be sustained release and release kinetic study shows best fitted model was zero order and shows non-fickian release mechanics . Due to presence coating of PS-80 on NP's show we can estimated that our formulated NP's may be crosses blood BBB by transcytosis mechanism.

***Keywords**: Alzheimer's disease, nanoparticle, agmatine, polysorbate 80.*

PT/ST1/00164

Preparation and Evaluation of Spray Dried Carbamazepine powder for Modification of Physicochemical characteristics.

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Abstract: Carbamazepine (CBZ) possess Anticholinergic, Central Anti diuretic, Antiarrhythmic, Muscle relaxant, Antidepressant, Sedative and Neuromuscular blocking properties. CBZ inhibit sustained repetitive firing by blocking use dependent sodium channels. Pain relief is believed to be associated with blockage of synaptic transmission in the trigeminal nucleus and seizure control with reduction of post–tentanic potentiation of synaptic transmission in spinal cord. According to BCS classification system, it is BCS class II compound. Carbamazepine solubility in water and gastrointestinal fluid is 0.190mg/ml and 0.150 mg /ml. respectively, and hence practically insoluble in water. This results in its limited and variable bioavailability from 30 to 40%. In the present study the solid dispersion powder of Carbamazepine were successfully prepared using hydrophilic polymer PVPK30. Dissolution profile of pure drug never reaches to 32 % after 60 min. this might be poor solubility and wettability of these particle. The spray dried CBZ showed improvement in dissolution profile but the drug release reaches to 100.03% after 60 min. This improvement was attributed to coating of drug particles by hydrophilic polymer. All batches of solid dispersion showed increase in solubility this was due to reduction in surface area, change in surface morphology, and amorphous nature of prepared batches. The conversion of crystalline pure drug in to amorphous form was confirmed by PXRD and DSC studies. Spray drying technology, hydrophilic carrier, can improve physicochemical property of hydrophobic drug and stabilize it.

Keywords: Carbamazepine, Spray drying, PVPK30, Solid dispersion, Dissolution, Stability.

PT/ST1/00165

VALIDATION OF HOT AIR OVEN

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ABSTRACT

Validation of any equipment is done and followed to ensure that any equipment used in the pharmaceutical process is executing all of its pre-specified tasks. Following the validation phase, qualification assures that every element of its design, installation, performance, and operation adheres to pre-approved criteria and standards. Sterilization is a term used to describe any antimicrobial method used in the manufacture of products or any technique used to attain sterility. A hot air oven is a device that uses dry heat (max. 400°C) to depyrogenate equipment that cannot be depyrogenated using wet heat (max. 160°C) or any other procedure that uses heat at a lower temperature. Sterilization validation and certification is a critical procedure that has been recognised by regulatory authorities such as the FDA, ISO, and EU laws. Several tests, including as Integrity, Distribution, and Penetration Test, are used to qualify the functioning of a hot air oven. This research project aims to demonstrate the validation and certification procedure that takes place prior to the dry heat sterilisation process in any sector during manufacture of pharmaceutical product, with a particular focus on heat distribution and heat penetration examinations of empty and filled chambers.

Keywords: *Validation, Qualification, Performance Qualification, Depyrogenation, Dry Heat Sterilization. Distribution studies, Penetration studies*

PT/ST1/00166

FORMULATION AND PROCESS VALIDATION OF SIMVASTATIN GRANULES

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Abstract: Validation is a subject that has grown its importance within the global healthcare industry over the past 25 years. Validation is a vital part of quality assurance; according to FDA, assurance of product quality is derived from careful and systemic attention to a number of important factors.To systematically carry out the validation studies for the production of Simvastatin granules 150mg.To develop validation Protocol, execute the protocol and generate it.Dispensing: raw materials used in the preparation were of analytical grade. The weighing of raw materials was done using a digital analytical balance and transferred into glass containers for further processing.The rechecking of weights of raw materials was done before starting up. Raw materials like API, Ingredients,1,2,5,6 &7 were sifted manually with a #30 S.S sieve and collected into S.S bins.The above-sifted materials are loaded into a rapid mixer granulator and mixed for 20 min with the impeller at slow speed and chopper at off position. To the above-blended add ingredient 3 and mix it for 1-3 mins at a suitable RPM and collected in to S.S binsThe above blend in a hot air oven at an inlet temperature of 50°C ±5°C for 10min was carried out and Checked for the LOD (1.5-3.0%)The granules that pass through #22 and #44 mesh S.S sieve are loaded into a double cone blender. Blend the above material for 15min at RPM and record the RPM.Three consecutive batches of simvastatin 250mg were prepared and as per the process validation protocol for Simvastatin 250mg, process was challenged at different settings as mentioned in the sampling test plan. All the material's attributes are controlled and qualified. The granule formulation is found satisfactory and the results were found to be meeting the acceptance criteria.

Keywords : Validation, Simvastatin, Rapid mixture granulator, Process validation.

PT/ST1/00168

Development and evaluation of herbal handwash using terminalia chebula (Haritaki) fruit extract.

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Abstract: The use of handwash has started recently, the slow and steady technological and chemical advancement in liquid soap has enabled formulators to develop various compositions of handwash with various new chemical ingredients. We can find numerous types of handwash formulation available in the market with different compositions from new to some formulations whose formulation dates hundreds of years ago. Hand-washing is a mandatory process in everybody life. Hands are considered a major source from where pathogens can enter human therefore appropriate formulation of handwash is required. Several Herbs are known to have antimicrobial properties thus utilization of such herbs as antimicrobial agent is done in recent study. Herbal remedies are accepted as they are safer to use with least side-effect as compared to synthetics. Terminalia chebula (Haritaki) is a popular medicinal plant in Ayurveda for its medicinal value in the treatment of enteric disorders. It has a broad-spectrum antimicrobial property against E.coli, Bacillus subtilis, Staphylococcus Aureus, Pseudomonas aeruginosa.The present work is about development and evaluation of herbal handwash containing terminalia chebula (haritaki). Terminalia Chebula is a key ingredient in formulating a handwash that is free from synthetic disinfectant. It prevents certain side-effects developed on user's skin on prolonged usage of synthetic disinfectant. For evaluation of the antimicrobial activity of herbal handwash made using terminalia chebula fruit extract against skin pathogens. Disc diffusion method was utilized and pathogens used is Bacillus Subtilis. Herbal handwash efficacy was checked and compared with the standard commercial hand wash available in market. Results shows that herbal handwash's efficiency equal to that of marketed synthetic handwash. Herbal hand wash formulations were further evaluated for some parameters such as odour, colour, pH, viscosity, foam height, foam retention and spreading potential and results met the standard limits. Further evaluation can be carried out.

Keywords: *Herbal handwash, Terminalia chebula, Disc diffusion, liquid soap, Disinfectant, Pathogens, E.coli, Bacillus subtilis, Staphylococcus Aureus, Pseudomonas aeruginosa*

PT/ST1/00170

Formulation and Characterisation of Sesamolin loaded Microbeads Incorporated into Gel

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Abstract: The aim of the present work was the formulation and characterization of sesamolin loaded microbeads incorporated into gel to enhance its topical drug delivery. Sesamolin is a lignan isolated from the seeds of *Sesamum indicum L.* and shows antibacterial properties. Microbeads of sesamolin were prepared using sodium alginate and eudragit . the prepared microbeads were analyzed for particle size, bead uniformity, percentage drug entrapment, in- vitro drug release study and drug content. The prepared beads were further incorporated into gel and the formulation was evaluated for pH, viscosity, spreadibility, in- vitro drug release study and the results were found to be within acceptable limits.

Keywords: *microbeads, sesamolin, topical dryg delivery , Sesamum indicum L. ,Antibacterial , sodium alginate , eudragit*

PT/ST1/00171

PROCESS VALIDATION OF ZOLPIDEM TARTARATE TABLETS.

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Abstract: This study is intended to demonstrate and standardize the data that should be routinely included in the marketing authorization dossier describing the evaluation or validation of the manufacturing process and distinguish them from those validation data which more properly fall under the remit of GMP Inspection. During the study the critical process variables of Zolpidem tartrate tablets 5 mg/ 10 mg were validated to demonstrate consistency of the manufacturing processes to produce the products of desired quality. The validation studies were conducted on 3 consecutive batches, which were intended for the use of commercial purpose so this validation study is concurrent type. The batches were manufactured as per batch processing record with a batch size of 2400000 Tablets equivalent to 288.0 Kg blend. Samples were collected and analysed as per process validation protocol. The blend assay of three different batches were obtained in the range between 95 %-105 %, the uniformity of dosage form is obtained with an average of 101.6 %, 99.2 %, 100.3% and the percentage amount of drug dissolved is in the range of 80%-105%.The analytical results of compressed and coated tablets were meeting to the specified limits. All the in-process variables and finished product characteristics were monitored, the statistical analysis of the data was carried out. Further from the results, it is inferred that the manufacturing processes of Zolpidem tartrate tablets 5 mg/10 mg are valid.

Keywords: *Critical quality attributes, critical process parameters, concurrent validation, Tablet XIX.*

PT/ST1/00172

DESIGN METHOD AND CHARACTERIZATION OF CHITOSAN-LOADED CARVEDILOL NANOPARTICLES BY IONIC GELATION

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Abstract: Regardless of the crucial advances achieved within the discovery of latest drugs, there are some drugs whose clinical potentialities are not promising. It is due to bad solubility, confined bioavailability, and other unsatisfactory biopharmaceutical properties. A major problem associated with the oral delivery of anti-hypertensive tablets is their negative water solubility and low oral bioavailability. Carvedilol, a category II drug in the biopharmaceutics classification device, is absorbed orally but is insoluble in water. Because of this, it is a prerequisite to similarly look at and develop an alternate drug delivery device to enhance the therapeutic efficacy of carvedilol in addition to, to decrease the side effects of conventional treatment therapy which offers controlled and sustained drug .
The emanating technologies in drug delivery inclusive of nanoparticles (NPs) can improve the healing index of drugs and necessarily contribute to improving affected person compliance. Over the past few decades, there was widespread hobby in growing biodegradable NPs as effective drug delivery devices. Chitosan (CS), a naturally occurring catatonic polysaccharide is extensively used as a polymer for the formulation of nanoparticles. Carvedilol chitosan nanoparticles were prepared by using ionic gelation approach the usage of sodium tripolyphosphate as a crosslinking agent. The cause of this study was to prepare hydrophobic antihypertensive nanoparticles of Carvedilol with the use of chitosan as a biodegradable polymer. Carvedilol nanoparticles were correctly formulated with the usage of the ionic gelation technique with low particle size and high entrapment efficiency. The obtained nanoparticles containing chitosan polymer confirmed an increase in relative bioavailability.

Keywords: *Nanoparticles, Carvedilol ,Chitosan, anti-hypertensive, ionic gelation*

PT/ST1/00173

Formulation and Evaluation of Antidandruff Herbal Gel Shampoo

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Abstract: The main aim of this present study is to prepare and evaluate the herbal gel shampoo. Herbal gel shampoo as its own potential cleansing and nourishes to hair and is a natural hair care product for removing dust, dirt, helps to protect from hair damage, promotes hair growth, dandruff. Most of the herbs used in Ayurvedic system which include Neem, Brahmi, Hibiscus, Amla. Herbal ingredients also used as various cosmetic preparation such as Vatika Antidandruff shampoo, Himalaya Antidandruff shampoo, Ayur Antidandruff shampoo, Arish Antidandruff shampoo. The treatment for hair and scalp is involved on the basis of shampoos effective cleansing activity, for years the shampoo is considered for maintaining the health and beauty of hair. This is focused on gel shampoo mainly based on gelling agents, herbs, synthetic surfactants and foaming agents. Extraction of Herbs is used such as hibiscus (Hibiscus rosasinensis), orange peel (Citrus aurantium Linn), ginger (Zingiber officinale), Alma (Phyllantus emblica), fenugreek (Trigonella foenum-graecum), henna (Lawsonia inermis), curry leaves (Murraya koenigii) in different proportions. As the selected ingredients, have been used since long time in all the formulations, so the present investigation will certainly help in standardization of good quality and purity of Herbal Gel Shampoo. The physicochemical parameters of herbal gel shampoo are performed. The characterization of Herbal Gel Shampoos such Viscosity (6.8), pH of the formulations (5.3+0.3- 6.8+0.2), Wetting time (176), Surface tension (1876), Dirt dispersion, stability was evaluated. Formulations were clear, had good foam formation, foam quality and retention along with proper rheological properties.

Key words: *Antidandruff, Herbal plant extract, Keratolytic, Cytostatic, Fungicidal, Triethanolamine, Carbopol.*

PT/ST1/00174

CLEAN ROOM GARMENTS: A CONTAMINATION CONTROL TOOL IN ASEPTIC MANUFACTURING OF DRUG PRODUCTS

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Abstract: Quality may be defined as the level of acceptance of a goods or services. For the textile and apparel industry, the product quality is calculated in terms of quality and standard of fibres, yarns, fabric construction, colour fastness, design and the final finished garments. The importance of garments in pharmaceutical industries is to protect the processes and peoples in cleanrooms. It provides an overview of the sterile cleanroom apparel category and defines key areas for improvement. It introduces a new concept for sterile cleanroom gowning to help minimize the problems associated with current technologies. Information from this project has great impact on cleanroom activities including gowning practices. Topics associated with cleanroom garments are discussed including fabric types, garment lifespan, recycling. laundering, human changing procedures, training, behaviour, hand sanitization, on going assessments, and associated topics. The quality control test of description, visual examination, weight, thickness, particle shedding and sterility tests for cleanroom garments (aseptic processing area garment, manufacturing area garment and inner garment) were performed and results found satisfactory within the limits.

Keywords: *Sterile area garments, Disposable garment, Reusable garment*

PT/ST1/00175

FORMULATION AND EVALUATION OF THE TRANSFEROSOMES FOR THE POTENTIAL DELIVERY OF DITHRANOL FOR TREATING PSORIASIS

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Abstract: Transdermal drug delivery route is one of the most efficient system for controlled drug administration, which eliminates all the demerits and causes no GI adverse effects and it is more patient complaint. The application of transdermal delivery to a wider range of drugs is limited due to the significant barrier to penetration across the skin which is allied primarily with the outermost stratum corneum layer of the epidermis. Vesicular systems are amongst the most favourable methods for delivering the drug moiety through the transdermal route. Psoriasis is a chronic autoimmune disorder which is described by infected skin patches on the scalp, tips of fingers and feet, hands etc. Topical therapy is most widely used for treatment of psoriasis in the majority of patients. Many drugs are less permeable when spread throughout the psoriasis skin due to their physicochemical properties. Dithranol is a hydroxyyanthrone, anthracene derivative, which is used to treat psoriasis. The preformulation study was carried out initially by physical properties like appearance, melting point, solubility study and λ max determination. The transfesomes were formulated by thin film hydration technique using surfactant such as tween 80 and Span 80 in various concentration, and evaluated for their vesicle shape and type, entrapment efficiency, % drug content and In vitro drug permeation study. The shapes of dithranol containing transferosomes were found to be spherical in shape from SEM analysis. The % entrapment efficiency of deformable vesicles formulation were found to be in the range of 52.18 ± 0.58% to 92.18 ± 0.72 %. The entrapment efficiency of the F5 formulation was high (maximum 92.18 %). In vitro skin permeation studies show transfersome gels were found to increase the skin permeation by Franz diffusion cell as using dialysis membrane showing controlled effect. Finally it can be concluded that Dithranol transfersome gel were promising candidates for topical drug delivery, to prolong drug release and to improve site specificity to treat psoriasis.

Keywords: *Psoriasis, Transferosomes, Vesicular system, Permeation, entrapemnt efficiency, Transdermal therapy, In vitro drug permeation*

PT/ST1/00176

Formulation and Characterization of Genistein-loaded Nanostructured Lipid Carriers

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Abstract: The objective of the project was focused on the formulation and characterization of the genistein loaded nanostructured lipid carriers that can entrap enough quantity of the drug which will provide sustained release of the drug in the body. Genistein is a naturally occurring soy isoflavonoid, possessing anticancer, antiproliferation and antioxidant-like properties. The main disadvantage of the drug is poor solubility and less oral bioavailability restrict its usage. The nanostructure lipid carriers of genistein were developed with the aid of high shear-hot melt homogenisation technique by employing Tween 80 as a surfactant. The resultant formulation was characterized for its various physicochemical properties like average particle size, zeta potential and PDI are calculated using zeta sizer. Calibration curve of the drug and Invitro drug release studies were also carried out. SEM, FTIR, XRD are also performed to illustrate the morphology of the formulation. SEM illustrates the surface morphology; XRD determines the crystallinity of the formulation; FTIR results shown information about the molecular functional groups which helps in characterising the formulation properties. The encapsulation efficiency of the NLC formulation was found to be 83.92%. with particle size and zeta potential of the formulation was founded to be 221 nm and -17.3 mV respectively. The PDI of the NLC formulation was identified as 0.398. The characterization by FTIR confirmed the entrapment of Genistein inside the lipid core and the SEM images confirmed the amorphous nature of the formulation. In vitro release profile of the formulation also confirmed that its sustained release temperament was up to 3 days/72hrs, and releasing maximum of 92% drug in the medium.

Keywords: *Nanostructured Lipid Carriers, Genistein, Drug Release, FTIR, XRD, SEM*

PT/ST1/00177

PROCESS VALIDATION OF DISSOLUTION APPARTUS AND COMPARITIVE STUDY OF MARKETED PARACETAMOL TABLETS

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Abstract: The Validation is one of the most important steps in achieving and maintaining the quality of the final product if each step of the production process is validated we can assure that final product is of the best quality. According to US FDA in 1978, "A validation manufacturing process is one which has been proved to do what it purports or is represented to do. The proof of validation is obtained through the collection and evaluation of data, preferably, beginning from the process development phase and continuing the production phase. Validation necessarily includes process qualification (the qualification of materials, equipment, system, building, personnel), but it also includes the control on the entire process for repeated batches or runs. The present study focused on the execution of performance qualification of dissolution apparatus and further test the dissolution parameter of marketed paracetamol tablets. Paracetamol is used as an analgesic and is available in several brands in the market, making it challenging to select the safe and effective one. Therefore the aim of the study was to establish the pharmaceutical equivalence of the different brands of paracetamol tablets available in the market. Performance validation proved that the dissolution apparatus was in a state of validation and can be used for normal testing activities. Six different brands of paracetamol tablets (500 mg) were included in the study. All were tested according to their pharmacopoeia claim and methods for these tests were successfully conducted to find out that the dissolution value of all the tablets was more than D85%.

Keywords: *Paracetamol, Tablets, Dissolution, Validation, Disintegration .*

PT/ST1/00178

FORMULATION AND EVALUATION OF TOPICAL PREPARATIONS OF SALICYLIC ACID

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Abstract: The skin is the largest organ of the body and it protects from microbes and the elements, helps regulate body temperature, and permits the sensations of touch, heat, and cold. Salicylic acid is a drug used to treat mild to moderate acne. Salicylic acid, when applied to the skin, work by helping the skin to shed dead cells from the top layer and by decreasing redness and swelling (inflammation). This decreases the number of pimples that form and speeds healing. Topical products exist in many forms, such as ointments, gels, creams, lotions, solutions, suspensions, foams, and shampoos. The most commonly used topical preparations are semisolid dosage forms that include ointments, creams, lotions, and gels. Hence in the present work, salicylic acid loaded in serum, cream and gel were used to treat acne and psoriasis. As these conditions are associated with skin sensitivity and inflammation, the liquid plaster serve as protecting material after drying as patch and allows the semisolid formulation stays for long periods of time. All these formulations were prepared and evaluated for invitro studies for their efficacy.

Key words: *topical products, salicylic acid, serum, cream, gel, liquid patch*

PT/ST1/00179

FORMULATION AND EVALUATION OF PROLIPOSOMES FOR POORLY SOLUBLE DRUG

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Abstract: The objective of the study was to develop and evaluate the proliposomes dosage form of pioglitazone HCL. Proliposomes were prepared using D-mannitol as a carrier, Leciva S70(soya phosphatidylglycerol) as a phospholipids (SPG) and cholesterol as stabilizing agent by spray drying method. Proliposomes drug delivery system is a novel drug delivery system used to increase the stability of poorly water soluble drugs, efficacy and reduce the toxicity. Pioglitazone HCL is an anti-diabetic drug classified as a Bio-pharmaceutics classification system(BCS) Class-II com[pound with a poor aqueous solubility(<1 microgram/ml) and an acceptable permeability through bio-membranes. The strategy of the study is to increase the oral bioavailability when using proliposomes dosage form. The prepared proliposomes were evaluated for different parameters. From the FTIR results and DSC results, it was confirmed that no interaction between the pioglitazone HCL and excipients. Particle size analysis showed that with the increase in the carrier ratio, there is increase in the particle size of proliposomes, particle size were in the size range of 187-322.4 nm. SEM photographs conforms that the prepared formulations were spherical. The solubility of the pioglitazone HCL loaded proliposomes were in the range of 21.43 +- 0.048 to 48.10 +- 0.019 microgram/ml in pH 7.4 phosphate buffer. The percentage drug release of the formulation PL3 at the end of 12h was found to be 98.78+- 0.013%. Stability data confirmed that there was no significant changes in drug content and physical appearance in the stability conditions.

Keywords: Cholesterol, Proliposome, Phospholipid, Mannitol.

PT/ST1/00180

FORMULATION AND IN-VITRO EVALUATION OF SERTACONAZOLE ENTRAPPED MICROSPONGE BASED DRUG DELIVERY SYSTEM

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Abstract: Sertaconazole is an imidazole derivative, which act as fungistatic, fungicidal, antibacterial, anti-inflammatory, antitrichomonal, antipruritic. Sertacoanzole inhibits 14 α-demethylase which blocks ergosterol synthesis resulting in prevention of fungal cell multiplication and hyphae growth. The goal of the current study is to create a topical formulation that delivers the medication in a regulated manner, minimize side effects, and increase the effectiveness of the final product, with aid of microsponges. Microsponges loaded with sertaconazole were prepared by using quasi developed emulsion solvent diffusion with seven different proportions of polymer Eudragit RS100. The developed microsponge were analysed for particle size, production yield, entrapment efficiency and drug content. Scanning electron microscopic images of microsponges revealed that they are spherical in shape and contain pores. *In vitro* drug release results depicted that microsponges with 7:1 drug polymer ratio were more efficient to give extended drug release of 92.02% at the end of 24 hrs. Microsponge were then incorporated in to Carbopol gel and evaluated for pH, viscosity spredability and diffusion study. Thus, the formulated microsponges based gel of Sertaconazole would be a promising alternative to conventional therapy for safer and efficient treatment of various skin disorders like Athlete's foot, Tineapedis.

Keywords: *Micro-sponges, Sertaconazole, Eudragit RS100, Controlled drug release, Carbopol gel.*

PT/ST1/00182

SOLUBLITY ENHANCEMENT OF ARTEMETHER USING SOULPLUS BY SOLID DISPERSION TECHNIQUE

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Abstract: To stop the infection of other people and advance the cause of eradication, it is crucial to develop medications that target the transmission and stages of the mosquito life cycle. Artemether (ART), which is an active component of the Chinese herb qinghao, also known as Artemesia annua, has demonstrated efficacy against acute, uncomplicated, and severe falciparum malaria. It is a member of the artemisinins family. Chloroquine-sensitive and chloroquine-resistant strains of P. falciparum are both susceptible to it. It also works against P. vivax. the treatment of cerebral malaria is also recommended. Due to ARTM's limited oral bioavailability the therapeutic potential of the drug is, however, significantly delayed. Because ARTM is poorly soluble in water, it has a low bioavailability. The most optimal way for improving the solubility and dissolution of medications that aren't very water soluble is the solid dispersion method. By creating solid dispersions utilising Soluplus at various ratios using spray drying technology, the study's goal was to increase the solubility and dissolution rate of artemethrin. By using differential scanning calorimetry and Fourier transform infrared spectroscopy, prepared solid dispersions were characterised. Less crystallinity and faster rates of dissolution were detected in the spray-dried solid dispersions. The ideal medication to Soluplus ratio, according to results from a solubility study, is 1:3. Studies on the dissolution of solid dispersions revealed more drug release as compared to pure drug. So, we draw the conclusion that increasing the drug's rate of dissolution may be possible using an amorphous solid dispersion of artemether.

Keywords: *Solid Dispersion, Artemether, Soluplus, Solubility Enhancement.*

PT/ST1/00183

FORMULATION AND EVALUATION OF FAST DISSOLVING WAFERS OF SOLID DISPERSION INCORPORATED CINNARIZINE

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Abstract: Cinnarizine is a piperazine derivative, antiallergic with antihistamine, sedative and calcium -channel blocking activity . In the present study our primary objective was to formulate bilayer wafer of Cinnarizine to produce sustained effect on therapy of motion sickness. For the solubility enhancement, the Cinnarizine is complexed with cyclodextrin by co- precipitation method. This strip was formulated by casting and spraying techniques to get bilayer film and using different polymers in different ratios and concentrations. The polymer used in fast releasing layer is HPMC E15 (2% ,3%) and that in sustained release are Eudragit RS100(0.5%,1%) and PVP K30(0.5%,1%). The in-vitro disintegration time, the mechanical properties of the film, the in-vitro release profile and other parameters such as drug-excipients compatibility were evaluated. Based on the % cumulative drug diffusion, out of the four fast releasing formulations F2 was found to be the best formulation. The cumulative drug diffusion was found to be maximum for wafers prepared by Eudragit RS100 than those by PVP K30. The bilayer wafer formulation F1 was found to be the best among the eight bilayer formulations based on the release kinetics. The model fits to Higuchi which is indicative of the diffusion mechanism of drug release. From all of these findings it was concluded that HPMC E15 and Eudragit RS100 can be used to prepare bilayer buccal film of Cinnarizine which is the drug candidate for treating motion sickness.

Key words: *Cinnarizine, Bilayer buccal wafer, cyclodextrin ,Eudragit RS100,solvent casting.*

PT/ST1/00184

Development and evaluation of green synthesized silver nanoparticles of *Citrullus colocynthis* leaf extract and its antimicrobial activity.

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Abstract: The synthesis of nanoparticles from biologicals and extracts is evolving a new era of research interests in nanotechnology. Metallic nanoparticles are extensively used in the field of pharmacy and other medicine for delivery of drug effectively. Plant extracts are now used to prepare metallic nanoparticles. Metallic nanoparticles prepared using herbal extracts are supposed to be more stable and the synthesis rate is faster and safer than the other process. So the aim of the present study was to develop and evaluate herbal metallic nanoparticles using an environment friendly biosynthesis process and evaluate antibacterial activity using *Citrullus colocynthis* leaf extract. The silver nanoparticles of herbal extract of *C. colocynthis* were prepared by green synthesis method. The characterization of herbal metallic nanoparticles was done by UV-spectra analysis. The Herbal metallic nanoparticles were evaluated for antibacterial activity using disc diffusion method. The optical property of AgNPs was determined by UV-Visible spectrophotometer. The FTIR measurement was successfully done to identify the biomolecules and functional groups present in the herbal metallic nanoparticles as shown by the absorption peak. The antibacterial activity of aqueous and ethanolic extract of *C. colocynthis* showed significant activities against both the bacterial strains (*E.coli* and *K.Pneumoniae*). It was observed that aqueous extract had more prominent activity than ethanolic extract against the selected bacterial strain of *K. pneumoniae* and *E. coli*. Thus the Silver nanoparticles of *C.colocynthis* prepared by green synthesis method showed a significant antimicrobial activity against the selected bacterial strains and could be further used in treatment of infectious disease.

Keywords: *Nanoparticle, Citrullus colocynthis, Herbal metallic nanoparticle, Antimicrobial, activity.*

PT/ST1/00185

DEVELOPMENT OF MOISUTURIZSING GEL USING OATS (*AVENA SATIVA*) FOR THE PURPOSE OF MOISTURING WITH ANTIOXIDANT PROPERTY.

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Abstract: Oats (*Avena sativa*) is a unique cereal known for its multifunctional activity as well as nutritional profile. Oat bran is a good source of B complex vitamins, vitamin E, protein, fat, and minerals. In the field of dermatology, oats can be used as for management of various skin diseases such as eczema and atopic dermatitis. The purpose of the present investigation is to formulate and evaluate a skin moisturizing gel using *Avena Sativa*. The formulation is developed to suit all skin types. Fresh oat milk obtained from *Avena sativa*, was used in the formulation which is known to have soothing, moisturizing and nourishing property to treat sensitive and damaged skin. It is used in the formulation because it has exceptional nutritional and skin care benefits. Oats have different types of phenolic compounds that show antioxidant property. The formulation can be used for improving skin hydration. The main component of study 'Oat' is poorly water soluble, hence the gel-based formulation was selected. Oat moisturizing gel was prepared and optimized using 3^2 factorial designs. The O/W emulsion was prepared and added to Carbopol gel to formulate the moisturizing gel. The prepared formulation was evaluated for organoleptic characteristics, spread ability, viscosity, and pH value. The spread-ability, viscosity and pH values of optimized formulation were found to be 0.2±0.04, 23.4±1.9, 4.3 respectively. All the physicochemical properties of formulation were satisfactory. The *Avena sativa* moisturizing gel having moisturizing and antioxidant property can be used to treat damaged and dehydrated skin.

Keywords: *Oats (Avena sativa) , Emulsion , Moisturising, Gel*

PT/ST1/00186

ASSURANCE OF IMPACT OF FATTY ALCHOLS ON NIOSOMES FOR SKIN DRUG CONVEYANCE

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Abstract: Niosomes offers the great alternative as novel drug delivery system, which comprises of fatty alcohol, surfactants and charge inducers. Fatty alcohol offers rigidity to the bilayer vesicles and hence stability. However, stability of this system limits the use. Moreover, it also affects membrane permeability, encapsulation efficiency of niosomes. Hence the aim of the present investigation was to determine the effect of fatty alcohol on niosomes for topical drug delivery. The objectives of present study were: To formulate a niosomes using different types of fatty alcohols that differs in molecular weight and degree of Unsaturation. To characterize the effect of fatty alcohols on drug entrapment, vesicle size, % haemolysis and in vitro drug release. Hence result of present study shows that from different process variables on niosomes formation revealed that best hydration temperature was found to be 60° C for 5 min (Hydration time) with sonication. Average particle size found to be in range of 1-10 µm. Entrapment efficacy entrapment efficiency results showed that, increases in concentration of fatty alcohols, increase in the entrapment efficiency (1:0.25 to 1:1), but further increase in the fatty alcohols concentrations showed decrease in entrapment efficiency (1:2 to 1:3) compared to different carbon chain length of fatty alcohols myristyl alcohol showed least toxicity.

Keywords: *Niosomes, Fatty Alcohols, Entrapment efficiency, In vitro release, Haemolytic toxicity*

PT/ST1/00188

Formulation, Development, Characterisation and Evaluation of Cefixime Nanoparticles

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Abstract: Cefixime is an antibiotic for oral administration in treatment of bronchitis, gonorrhea and infection of throat and tonsils. microorganism present in respiratory tract develop resistance towards cefixime. For that development of NDDS as metal cefixime nanoparticles to provide antibacterial activity against resistanant bacteria. Cefixime nanoparticles were synthesized with metal ions such as Ag, Pd, Cd, Ni and Zn and characterized by UV, FTIR, FESEM, and EDAX. The antibacterial effects of nanoparticles were studied using cup plate method against normal and resistant strains of bacteria. Cefixime nanoparticles have shown colour changes indicated the reduction of metal ions which ensures the formation of nanoparticles. UV spectrum of cefixime nanoparticles have shown absorbance 288-290 nm, the shifting or change of absorbance from λ_{max} 288 might be due to formation of nanoparticles. The FTIR spectrum show change in wave number might be due to coordinte bond formation. The FESEM analysis indicates morphology of Cef-Ni nanoparticles++` showed a hexagonal structure in the range 42.3 – 96.2 nm; spherical shape of Cef-Zn nanoparticle in the range 36.3 – 62.2 nm. Antibacterial study showed that Cef-Cd, Cef-Zn and Cef-Ni metal nanoparticles show a greater activity against *P.aeruginosa* and *K.pneumoniae* and Cef-Cd show better activity against *P.aeruginosa*. The lowest MIC against *E.coli* of Cef-Cd and cefixime is 30 ug/ml and 50 ug/ml was observed nanoparticles require less concentration as compared to plain drug to inhibit growth of microorganism. The histopathology examination and acute toxicity show no significant changes in liver and stomach cells of rat between control and experimental group.

Keywords- *cefixime, antibacterial, MIC, resistance, nanoparticles*

PT/ST1/00189

Preparation and characterization of Nicorandil Inter-polymer complex as a controlled release matrix Tablet

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Abstract: Controlled release drug delivery systems are designed to manipulate the drug release for achieving specific clinical objectives that are unattainable with conventional dosage forms. The formation of inter-polyelectrolyte complexes (IPEC) between chitosan and sodium alginate was investigated, using turbidimetry and viscosity measurement. The structure of the prepared IPEC was investigated using FT-IR spectroscopy and DSC. In the present study the different IPEC were prepared by using solution of chitosan and sodium alginate in water, which when mixed in different ratio resulted in the formation of complex. These IPEC and their solutions were analyzed by various tests like FT-IR, DSC, viscosity measurement, and pH measurement, in-vitro drug release . These IPEC were subjected to size reduction and further processed for sustained release formulation using Nicorandil as a model drug.

Keywords: *Nicorandil, inter-polyelectrolyte complexes, chitosan, sodium alginate, sustained release drug delivery system.*

PT/ST1/00190

Nanocrystal technique to modify the solubility and dissolution of Acyclovir for the enhancement of bio-availability

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Abstract: Acyclovir (ACV) is a poorly water soluble drug which is generally associated with poor dissolution rate and thus leads to poor oral bioavailability of 15-30%. As per the Biopharmaceutics Classification System (BCS) 200 mg and 400 mg of ACV tablets are categorized under BCS Class III. But, 800 mg ACV tablets fall under the BCS Class IV category due to poor solubility and bioavailability. At a higher dose, the solubility and bioavailability of ACV will decrease at a higher dose because of its passive and incomplete absorption across the small intestine in which results in poor bioavailability (15-30%). So, clinically, ACV is prescribed as a 200 mg tablet for five times a day. In this study, the solubility, absorption and bioavailability of ACV was enhanced by preparing nanocrystals using a top-down technique, high speed homogenization. The prepared ACV nanocrystals were optimized with regard to particle size and size distributions, and also were characterized in terms of morphology characteristics, crystallinity studies followed by lyophilization, tablet punching and evaluations, and its pharmacokinetic properties. The solubility and dissolution characteristics of the prepared nanocrystal tablets were investigated and compared with marketed ACV tablet strength of 800 mg.

Keywords: Acyclovir, Nanocrystal, High speed homogenization, Dissolution, Solubility, Absorption.

PT/ST1/00191

Optimization and Development of Boswellic acid Loaded Self-Assembling Mixed Micelles Delivery System

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Abstract: A unique nano delivery system called mixed micelles, which is composed of two or more amphiphilic block copolymers, has various benefits, including selective targeting, increased stability, protection against oxidation and early drug degradation, and, most importantly, a decrease in side effects. One of the traditionally used medicinal plants, boswellic acid is said to have anti-inflammatory and anticancer properties. The purpose of the study is to increase bioavailability by the formulation of polymeric mixed micelles using Pluronic F-127 and Soluplus (PL-SO-MMs). Micelles were made utilising the thin film dispersion method and the 32 factorial design-response surface methodology, using the indicators of particle size and entrapment efficiency (EE%). Images taken using a transmission electron microscope (TEM) showed that the mixed micelles were nano-spherical and had a zeta potential between -10.70 and 20.70 mV. In conclusion, the Mixed Micelles (PL-SO-MMs) created in the current investigation demonstrated to be a potential drug delivery strategy for Boswellic acid.

Keyword: Polymeric mixed micelles, Boswellic acid, soluplus, pluronics F-127.

PT/ST1/00192

Apigenin Loaded Functionalised Phytosomal Soft Nano Particle For Liver Cancer Targeting: Systemic Development & Characterization.

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Abstract: In this study, formulation of apigenin-phospholipids complex (APLC) – loaded phytosomes was developed with an aim of improving solubility of apigenin. The APLC was prepared using an iono complex method. Physico-chemical characterization of prepared APLC was carried out using particle size and zeta potential, FTIR, DSC, PXRD, 1H-NMR. The optimized APLC and lyophilized formulation was functionally characterized for solubility analysis, *in vitro* dissolution via dialysis membrane using UV-Spectroscopy. Physico-chemical characterization showed a stable formation of APLC. The results of solubility study showed that APLC displayed an enhancement of aqueous solubility as compared to physical mixture, and pure apigenin. The rate and extent of dissolution of APLC, compared to pure apigenin was enhanced significantly. Therefore, based on the results we suggest that APLC provides a novel combination drug delivery approach for improving solubility of apigenin.

***Keywords**: Metformin HCL, Sustained release, HPMC K100M, Eudragit RL100,Floating DDS*

PT/ST1/00193

FORMULATION AND IN–VITRO EVALUATION OF TRANSDERMAL PATCHES OF ANTI–ARTHRITIC AYURVEDIC MEDICINAL PLANTS

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Abstract: The aim of the study is to formulate and evaluation of transdermal patches of anti-arthritic activity in *Vitex trifolia*. Transdermal patches of herbal extracts were prepared by solvent casting method. The patches were optimized on the basis of physicochemical evaluation such as thickness, folding endurance, physical appearance, uniformity of weight, moisture content, moisture uptake, pH and in vitro drug release, Dissolution studies. The graphs obtained for the average absorbance release with respect to time through transdermal film indicate drug release occurred at a constant rate. Overall, present study assures a novel approach in execution of transdermal delivery technology in the field of herbals. From the present study, it can be concluded that transdermal drug delivery system for *Vitex trifolia* with ethyl cellulose and PVP meet the ideal requirement for transdermal devices which can be a good way to bypass the extensive hepatic first – pass metabolism and increase bioavailability. Through the present experimentation, it has been found that the drugs of ayurvedic origin can be utilized in a better form with enhanced efficacy for incorporation in modern dosage form. This work is one of the first few attempts to utilize Ayurvedic drugs through TDDS.

Keywords: *Transdermal flim, Bioavailability, Anti-Arthritic, First-pass metabolism, Vitex trifolia.*

PT/ST1/00194

Formulation of Novel Nano Transdermal using effective combination of Acyclovir and Omeprazole for enhanced Anti-Viral Activity

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Abstract: Nanoparticles have acquired the ability to control surface properties of the formulation, its particle size and site-specific drug release. The present study demonstrates that Acyclovir and Omeprazole nanogel were successfully developed by solvent diffusion method using a combination of ultra-sonication and high speed homegenization. The prepared nanogel formulations were characterized for particle size and zeta potential and optimized using Malvern Zetasizer instrument. The TEM study confirmed the formation of nanogel is most often ultrathin section less than 100nm thick. In vitro dissolution studies were performed and F9 showed that have good dissolution rate. The drug release kinetics of optimized nanogel F9 revealed that the formulations undergone First order / anamolus / non-fickian diffusion drug release. It is evident that the obtained results of *invitro* dissolution studies of the formulation is more efficient than marketed acyclovir ointment. Consequently, from our study acyclovir and omeprazole nanogel (F9) showed that sustain drug release than marketed formulation, so it's evident that nanogel formulated results in increase in the anti-viral activity.

Keywords: *Acyclovir, Omeprazole, nanogel, Malvern Zetasizer instrument, Anti-viral.*

PT/ST1/00195

A stable ondansetron hydrochloride nanosuspension for improved dissolution: Development, optimization and invitro evaluation

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Abstract: Nanopaticles have acquired the ability to control surface properties of the formulation, its particle size and site specific drug release. The present research deals with the preparation of ondansetron hydrochloride (OND HCl) nanosuspension to enhance its oral bioavailability by improving its aqueous solubility and facilitating its absorption through lymphatic pathway. The ondansetron hydrochloride nanosuspension was prepared by nanoprecipitation method using blend of surfactants. The prepared liquid nanosuspension formulations were characterized for droplet size and zeta potential and optimized using Design expert 13 software to identify the optimum formulation variables. The TEM study confirmed the formation of nanosuspension. In vitro drug release studies indicated faster solubilization of the drug by optimized nanosuspension (over 90% within 30 min) vis-à-vis the pure drug (only 35% within 30 min). The drug release kinetics of optimized nanosuspension at pH 7.4 revealed that the formulations undergone First order / anamolus / non-fickian diffusion drug release. It was evident that the obtained results of *invitro* dissolution studies of the formulation showed improved solubility, stability, and rapid drug release. Consequently, nanosuspension represented a promising alternative delivery system for improving the physiochemical properties of BCS class II drugs.

Keywords: *Ondansetron hydrochloride, Solubility, Nanoprecipitation method, Nanosuspension.*

PT/ST1/00196

"DEVELOPMENT OF MOUTH WASH TABLET OF NATURAL BIOACTIVES FOR ORAL HYGIENE"

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Abstract: The main purpose of the present work was to develop solid mouthwash containing natural antimicrobial bioactives and their evaluation. Natural antimicrobial bioactive like such as Neem, Tulsi and Ginger have been scientifically proven to be safe and effective medicine against oral health diseases. Solid mouthwash was prepared by wet granulation method. Total nine formulation were prepared using three different super disintegrants like croscarmellose, crospovidone and sodium starch glycolate. Formulated tablets were evaluated for precompression parameter such as angle of repose, bulk density, tapped density, Hausner's ratio compressibility index. Post compression parameter like physical appearance, uniformity of weight, thickness, hardness, friability, wetting time, wetting volume, water absorption ratio, uniformity of dispersion and stability studies, all evaluation parameter found satisfactory. Formulation F3 contain croscarmellose sodium 5% w/w was considered to be best formulation which has least wetting time of 24 seconds, higher water absorption ratio of 104 % and disintegrate within 31 seconds. The antimicrobial studies revealed the F3 formulation prevent/suppress the visible growth of oral disease-causing test pathogen. The results of stability studies of F3 formulation indicated that the formulation was stable during their preservation.

Keyword : Solid mouthwash tablets, Neem, Tulsi, Ginger, croscarmellose sodium, crospovidone, and sodium starch

PT/ST1/00197

FORMULATION AND EVALUATION OF BOSWELLIA SERRATA NANOGEL

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Abstract: Nanotechnology is the science and technology of small things in particular things that are less than 100nm in size. This study has been done as an attempt to formulate Boswellia serrata in the form of nanogel which can be expected to reduce the dose frequency and increase the drug loading capacity. The study aimed to develop a nanogel with reduced particle size in order to reduce dose dependence side effect, to increase the drug bioavailability. The present study involves formulation of Boswellia serrata nanogel by solvent emulsification method by incorporating it into the gelling agent Carbopol 940, methyl paraben, EDTA and PEG 400.The formulated nanogel was evaluated for particle size, zeta potential, viscosity, spread-ability, pH, invitro drug release studies and drug release kinetic studies.The In-vitro drug release depends upon the Carbopol 940 concentration. The In-vitro release Boswellia acid from nanogel varies. In formulation BSNF1, BSNF2, BSNF3 drug release was because of high Carbopol 940 concentration, where the amount of drug release after 24 hours from formulation BSNF4, BSNF5 were found to be 90% respectively. Due to the optimisation of concentration of Carbopol 940 with constant PEG-4000 concentration throughout the formulation. Drug release kinetic study shows, it followszero order kinetics. Hence, we can anticipate that, the Boswellia serrata nanogel will be prioritized in future pharmaceutical developments/

KEY WORDS: *Boswellia serrata, Nanogel, Bioavailability, Carbopol.*

PT/ST1/00198

Formulation and Evaluation of Griseofulvin Loaded Transferosomal Gel

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Abstract: The purpose of this study was to formulate and evaluate Griseofulvin loaded transferosomalgel. **Griseofulvin** is an antifungal agent used to treat a variety of superficial tinea infections and fungal infections of the fingernails and toes. Grisefulvin loaded transferosomes were prepared by thin film hydration method using varied concentration of lecithin and tween 80. The prepared Transfersomes was evaluated with respect to entrapment efficiency, and particle size. Then transfersomes was incorporated into a Carbopol gel base and evaluated for drug content, pH, spreadability, viscosity, *in-vitro* drug release, and short term stability study. The prepared Griseofulvin transfersomes had a high entrapment efficiency ranging from 68.36 ± 0.74% to 92.11 ± 0.49 % with nano particle sizes ranging from 128.54 nm to 180.60 nm. The surface morphology of transferosomes was measured by using scanning electron microscope and vesicles were found to be spherical in shape. The *in-vitro* release study was carried out for 18 hrs for all the nine formulation in which GRF-7 showed a better drug release of 90.2% CDR. The kinetic release study was carried out and the formulations followed zero order kinetics with korsmeyer peppas drug release pattern. Stability results showed no significant change in pH, drug content, and cumulative percentage drug release which indicates no drug degradation. Therefore, Griseofulvin in the form of transfersomal gel has the ability to sustain the drug release for the longer duration, hence decreases the frequency of applications of drugs and also improves patient compliance.

Keywords: Antifungal, Drug release, Frequency, Griseofulvin, Tinea infections, Transfersomes

PT/ST1/00199

PREPARATION AND EVALUATION OF PIOGLITAZONE SOLID DISPERSIONS AND INCLUSION COMPLEX

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Abstract: Pioglitazone is type-II antidiabetic drug of BCS class II and the solubility was rate limiting for dissolution. The aim of present study was to develop solid dispersions using HPMC, poloxamer and inclusion of Pioglitazone using βCD to increase the solubility and dissolution. Pioglitazone solid dispersions were prepared with HPMC, poloxamer 1:1 and 1:3 ratios by microwave irradiation, Kneading and precipitation method, inclusion complex were prepared with βCD at 1:1 and 1:2 molar ratios by cogrinding and precipitation method. The systems were studied in solution state by phase solubility, *in vitro* dissolution rate and solid state by FTIR, DSC and XRD. The dissolution parameters were studied by using dissolution software PCP Disso V3. The phase solubility profile depicts A_L type and apparent stability constant indicates there is a 1:1 stoichiometric complex. The Solid Dispersion and inclusion of Pioglitazone in the solid state were confirmed by FTIR, DSC and XRD. The dissolution of inclusion complex was superior to physical mixture and pure drug. The best fit model was found to be Hixon crowell and release profile obeyed first-order kinetics. One way ANOVA test suggest DE_{30}, DP_{60}, DE_{30} and DE_{60} values were significantly higher ($P<0.05$) in solid binary systems than the pure drug and its corresponding physical mixtures. Improvement in dissolution properties was in following order βCD, with ratios 1:2M > 1:1M and methods PPTN > KNE>MICRO >PM > Pure drug.

Key words: Pioglitazone, poloxamer, HPMC, βCD, Inclusion complex, Solid Dispersions

PT/ST1/00200

Formulation And Evaluation Of *In Situ* Nasal Gel Of Rizatriptan Benzoate

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Abstract: Migraine is a particular form of recurrent headache that is often characterised by one-sided, pulsating or throbbing pain, at least moderate if not severe, and worsened by ordinary daily activities. Among most of the treatment used triptans are found to be more effective and selective with their mode of action. Rizatriptan acts selectively by binding to Serotonin (5-hydroxytryptamine) 5-HT_{1B} and 5-HT_{1D} receptors in cranial blood vessels and subsequently inhibit pro-inflammatory neuropeptide release. Preparation of *In situ* nasal gel aids in prolonging the residence time of the formulation, prevents post nasal drip, mask the bitter taste, prolongs drug release due to gel formation and is effective in treating chronic headache. As most of the marketed nasal preparation do not posses inherent ability to bind to the nasal mucosa, this is best achieved through improved formulation. The present formulation is fluid at pH (4-5) before administration and underwent rapid gelation when come in contact with physiological pH 6.8 at nasal mucosa. Nasal *in situ* gels were formulated using different concentration of pH sensitive Carpobol (0.1 to 0.5 % w/w) and HPMC E5 as mucoadhensive agent. Formulation were evaluated for gelling capacity, viscosity, mucoadhensive force, drug content, Release study, permeability study and histopathology study.

Keywords: *In situ* nasal gel, Carbopol 934, HPMC E5, pH induced.

PT/ST1/00201

"ADDRESSING USE OF NATURAL COMPOUNDS AND PHYTOCHEMICALS IN NOVEL DRUG DELIVERY SYSTEM FOR THE TREATMENT OF PROSTATE CANCER"

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Abstract: This article summarizes the anticancer mechanisms of various phytochemicals and the different novel drug delivery systems available for these natural compounds and their prospects in the prostate cancer context. Prostate cancer (PCa) is a disease in which malignant (cancer) cells form in the prostate tissue. Worldwide, it is the most common cancer in men and the sixth leading cause of cancer death in men. It's estimated that 1 in 5 of his men will develop prostate cancer in his lifetime, with his 100% survival rate from stage I to III and his 29% survival rate from stage IV onwards. It is primarily diagnosed by the PSA (prostate-specific antigen) test, which is a controversial screening test. Other diagnostic techniques include MRI scans and prostate tissue biopsies. New diagnostic techniques such as biohazard stratification, germline testing, and various PET scans are also available. Treatment and management of prostate cancer includes a wide range of treatments, including surgical methods, radiation therapy, local therapy, and systemic therapy (including chemotherapy, immunotherapy, hormone therapy, etc.). Natural phytochemicals like alkaloids, natural antioxidants like olive oil, naphthoquinones, etc. have been extensively studied for the treatment of prostate cancer along with advances in treatment. Various natural products have been investigated for anti-PCa mechanisms, including inhibition of tumor growth and angiogenesis. These phytochemicals have also been shown to specifically target androgen receptor (AR) signaling and PCA stem cells. Developments in drug delivery systems & targeted drug therapies using phytochemicals show great potential in the treatment of prostate cancer.

Keywords: Prostate cancer, PSA, Phytochemicals, natural compounds, naphthoquinones, novel drug delivery system.

PT/ST2/001

SIMULTANEOUS ESTIMATION OF INULIN AND ESCULETIN IN AN AYURVEDIC FORMULATION USING RP-HPLC AFTER DERIVATIZING THE INULIN.

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Inulin is a fructose polymer (68%) in fresh chicory roots. Esculetin is a simple coumarin. Inulin a polysaccharide direct analysis on C_{18} is not possible due to a lack of chromophore needed derivatization with Seliwinoff's reagent before analyzing. A simple, sensitive, precise, and accurate RP-HPLC assay method was developed for simultaneous estimation of Inulin and Esculetin in formulation containing Chicory. The chromatographic separation was achieved using C_{18} Phenomenex Hyperclone BDS column (250×4.6mm, 5µ). The mobile phase containing a mixture of 10 mM of phosphate buffer (pH 3.0) and acetonitrile (35: 65 v/v) at a flow rate of 1ml/min was used and the response was measured at 364nm (isosbestic point) using a PDA detector. System suitability test (SST) was recorded and all the values were according to USP and ICH. The retention time of Esculetin and Inulin is found to be 3.7 and 7.1 minutes respectively with a resolution of 8.5. The method was linear over the concentration range of 0.05-0.8 µg/ml for Esculetin and 0.4-3 µg/ml for derivatized Inulin with a correlation constant of ≥ 0.999. The method was found to be precise, and robust within the acceptable limits. The LOD and LOQ were to be 0.006308 µg/ml and 0.01912 µg/ml for Esculetin and 0.06131 µg/ml and 0.1857 µg/ml for derivatized Inulin which indicates the sensitivity of the method. The % recoveries of Esculetin and Inulin in herbal preparation were found to be 0.2 and 58 respectively. The method can be used for the simultaneous estimation of Esculetin and Inulin.

Keywords- Inulin, Esculetin, Derivatization, Seliwinoff's reagent, RP-HPLC, Validation.

PT/ST2/003

VALIDATED RP - HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF TADALAFIL AND DAPOXETINE IN COMBINED PHARMACEUTICAL DOSAGE FORMS

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Tadalafil and Dapoxetine is a combination drug of choice used to treat premature ejaculation in men. The main objective of the Simultaneous estimation of combined drug is to establish identity, physical characteristics and potency of the drugs and to demonstrate the suitability of the assay method to provide useful data to ensure the technique gives satisfactory and consistent results. A HPLC (Inertsil, Water2695) with UV/VIS Detector/PDA detector, UV (lab India, UV 3000$^+$ series) and Inertsil C18 250mm × 4.6mm × 5µm column was used. A new method was established for simultaneous estimation of Dapoxetine and Tadalafil by RP-HPLC method. The chromatographic conditions were successfully developed for the separation of Dapoxetine and Tadalafil by using inertsil C18 5µm (4.6*250mm) column, flow rate was 1ml/min, mobile phase ratio was Phosphate buffer (0.05M) pH 3: MEOH (30:70%v/v) (pH was adjusted with orthophosphoric acid), detection wave length was 260nm. The results were in good agreement with those obtained with official HPLC with absorption maximum of 260 nm by

preparing mobile phase 70:30 methanol: phosphate bufferwith flow rate 1 ml/min and it run for 30 minutes by selecting column Inertsil C18 4.6mm×250 mm. All the results obtained with good precise, accurate and robustness as per international conference on Harmonization (ICH)guidelines. It can be concluded that the proposed RPHPLC method is accurate, precise, sensitive, robust and reproducible for the simultaneous analysis of Tadalafil and Dapoxetine with less tailing factor and is also economical. Inertsil C18 column (4.6×250mm)5µ, flow rate was 1ml/min. Both samples scan in the range of 200 to 400 nm and maximum wavelength was identified at 260 nm.

Keywords: Inertsil C18, Dapoxetine and Tadalafil, RP-HPLC

PT/ST2/004

STABILITY INDICATING METHOD DEVELOPMENT AND VALIDATION OF SUMATRIPTAN

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A HPLC waters(Empower-2-software) with UV/VIS Detector, Electronic Balance AY220, PH meter MKVI, Ultrasonicator Biotech 250, Hamilton syringe and Vaccum Filteration was used. A method is established in the estimation of sumatriptan in bulk and pharmaceutical tablet dosage form by RP-HPLC method. The chromatographic conditions were successfully developed by using Phenomenex kinetex(250*4.6mm, 5µi.d) column, flow rate was 1ml/min, mobile phase ratio was Acetonitrile: Methanol: Tri ethyl amine – 10:10:80 respectively (pH was adjusted with orthophosphoric acid), detection wave length was 221nm . The results were in good agreement with those obtained with official HPLC with absorption maximum of 221 nm by preparing mobile phase 10:10:80 Acetonitrile: Methanol: Tri ethyl amine with flow rate 1 ml/min and it run for 10 minutes by selecting column Phenomenex kinetex(250*4.6mm, 5µi.d) . All the results obtained with good precise, accurate and robustness as per international conference on Harmonization (ICH)guidelines.It can be concluded that the proposed RPHPLC method is accurate, precise, sensitive, robust and reproducible for the estimation of sumatriptan in bulk and pharmaceutical tablet dosage form with less tailing factor and is also economical Phenomenex kinetex column (250*4.6mm, 5µi.d) flow rate was 1ml/min. Samples can be analysed with maximum wavelength was identified at 260 nm.

ORDS: Phenomenex kinetex column, Sumatriptan, RP-HPLC

PT/ST2/005

DOCKING STUDIES OF 5-{[(2*E*)-2-CYANO-3-(SUBSTITUTED PHENYL) PROP-2-ENOYL] AMINO}-2-HYDROXYBENZOIC ACID DERIVTIVES.

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For rational drug design, it is important to know the structure of the target receptor enzyme at the recognition site.5-Aminosalicylic acid is one of the principal drugs administered for the IBD treatment which is used as a prodrug. However, its use is limited due to adverse effects. Therefore, this study was designed to explore the affinity of 5-ASA derivatives at the binding sites of COXI and COXII and also to know the amino acids that are involved in binding interactions by docking simulations. All docking simulations were carried out by using Schrodinger Maestro9.1and were done based on the crystal structure of COXI and COXII enzymes with PDB code of 1EQG and 1CX2, respectively. The results showed that 5-ASA and its derivatives can fit in the active site of COXI and COXII with good affinities being more active on COXII ensuring the inhibition of inflammation.

Keywords: *5-ASA, Docking, COXI and COXII.*

PT/ST2/006

DEVELOPMENT AND VALIDATION OF A NEW HPLC-PDA METHOD FOR THE SIMULTANEOUS QUANTITATION OF CDK4/6 INHIBITORS OF PALBOCICLIB & RIBOCICLIB IN SPIKED HUMAN PLASMA.

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A sensitive and selective HPLC- PDA method has been developed and validated for the quantification of the two approved CDK4/6 inhibitors (Palbociclib and Ribociclib) in human plasma using liquid chromatography coupled to diode array (HPLC-PDA). Chromatographic separation was achieved based on aqueous reversed-phase chromatography mechanism on a Inertsil ODS-2 column Under isocratic elution with ACN – phosphate buffer (5 mM, pH 5) (30:70, v/v) at a flow rate of 1 mL/min. A full validation was performed according to FDA and EMA guidelines on bioanalytical method validation for human plasma. Protein precipitation method was used to extract the drug form plasma samples using acetonitrile as a precipitating solvent. The linearity was assessed (R2 within 0.9992–0.9983) over the concentration ranges of 10–500 ng/mL for palbociclib and 10–12000 ng/mL for ribociclib that properly cover the therapeutic plasma concentrations. Intra- and inter-day precision and accuracy were within ±20% and ≤20% generally accepted criteria for bioanalytical method.

PT/ST2/008

ULTIMATE EXECUTION STRATEGY FOR IMPLEMENTING ICHQ 1A (R2)-STRESS STABILITY STUDIES: A QUICK SHIFT FR

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Studies carried out to clarify the drug substance's inherent stability, according to the International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use (ICH). Such testing, which is a component of the development plan, is typically conducted in more rigorous circumstances than those utilised for accelerated testing. In order to test the physical, chemical, and medicinal integrity of new drug products and substances, forced degradation simulates stress situations. It exhibits strict hydrolytic, oxidative, thermal, and photolytic conditions to study the stability behaviour, displaying the chemical behaviour of the new drug product and material in fluctuating storage settings. As acceptable reagents for hydrolysis, caustic soda or potash (0.1-1 M) are proposed for base hydrolysis and hydrochloric acid or sulfuric acids (0.1-1 M) for acid hydrolysis. In order to create oxidative degradation products, hydrogen peroxide (H2O2) is employed. These products could appear as small contaminants during upcoming stability testing. It is frequently used in concentrations between 3 and 30 percent for 2 to 8 days at a temperature below 40 °C. A spectral distribution of 320–400 nm, integrated near ultraviolet energy of not less than 200 W-h/m2, and an overall illumination of not less than 1.2 million lux h are required for photodegradation. The range of the thermal deterioration investigation is 40 to 80 °C. The most popular temperature for 1-2 months is 70 °C with low and heavy humidity. These review articles address the question, "How to implement forced deterioration studies effectively?" during impurity profiling investigations and the development of analytical methods for stability indication.

PT/ST2/009 PAID

METHOD DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR THE ESTIMATION OF ZILEUTON IN TABLET FORMULATION

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A simple, selective, economical, rapid, accurate and precise RP-HPLC method
for the analysis of zileuton in bulk and its formulation was developed and validated in the present study. Acetonitrile and water (55:45) were employed as the mobile phase in present analysis on an enable reverse phase C18 (250 mm × 4.6 mm, 5) column were used. The wavelength was monitored at 227 nm by using UV detector and the flow rate was 0.8 ml/min. The developed method resulted in elution of zileuton was found to be 2.1min. With a correlation coefficient of 0.9996, the method shows a good linear response in the concentration range of 5 to 30µg/ml. The validation parameters such as linearity, accuracy, precision, inter-day and intra-day variation, percentage recovery, limit of detection and limit of quantification were checked. The results obtained in the study were within the limits of ICH guidelines. Hence the developed method can be used for routine analysis of zileuton in pharmaceutical industries.

Key words: RP-HPLC, validation, zileuton, acetonitrile.

PT/ST2/0011

A STUDY ON MINERAL CONTENT AND CONCENTRATION IN LEAF AND PEEL EXTRACT OF *PUNICA GRANATUM* BY FT-IR AND UV-VISIBLE SPECTROSCOPY METHOD

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The mineral composition is an essential element for both nutrition and safety. A balanced diet is necessary for the presence of minerals with trace levels of other elements like chromium and cobalt as well as necessary minerals like calcium, iron, zinc, copper, magnesium, and to a lesser extent, lithium and selenium. Deficits can impede some of the body's essential processes as well as causing minor diseases. Some mineral deficiencies can lead to fatal conditions like anaemia and other serious illnesses. When Punica granatum's leaf and peel were exposed to various extraction solvents, it was discovered that the plant had a high mineral content. Punica granatum's methanolic extract had a high mineral content, according to the analysis results. The elements present in Punica granatum play a significant role in the treatment of various diseases mentioned in the traditional medical system, according to the FT-IR spectroscopic studies. Using the KBR-pellet technique, elemental analysis was performed on various Punica granatum methanolic extract samples. The results showed that K, P, Mg, Ca, Zn, and Al were the most abundant elements, in that order, and that no potentially toxic elements were found. The UV-Visible spectroscopy technique was used to determine the concentration of calcium and iron. According to the current study, Punica granatum's leaves and peel contain a sufficient number of minerals for use in formulations.

Keywords: Punica granatum, FT-IR, UV-Visible spectroscopy, mineral content, KBR- pellet.

PT/ST2/0012 PAID

DETERMINATION OF ASCORBIC ACID IN EXTRACTS OF *ACTINIDIA DELICIOSA* BY TITRIMETRIC AND REVERSE PHASE-HPLC METHOD

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In the modern era, antioxidants continue to advance in their wide range of pharmacological significance. This has sparked a huge amount of research into its potential health advantages. One of the most essential water-soluble vitamins in the human diet is ascorbic acid (AA), which is found naturally in a variety of foods, including fruits and vegetables. This study set out to quantify the ascorbic acid (vitamin C) content of *Actinidia deliciosa* (Chinese gooseberry/kiwi) using both titrimetric and RP-HPLC methods. Soxhlet and maceration procedures were used to extract ascorbic acid from the peel of *Actinidia deliciosa* (peels) by using appropriate solvents including distilled water, methanol, ethanol, and oxalic acid in different ratios. At first, the determination was done by using iodometric titration. The shade-dried peel was shown to have a high concentration of 0.42g/ml. Secondly, Acetonitrile-water (60:40; v/v) was used as the mobile phase, and a C_{18} column was used to achieve chromatographic separation. The effluent was measured at 265 nm. Over the concentration range of 10–50 µg/ml, the test was linear. The statistical one-way analysis of variance was used for the analysis (ANOVA). In comparison to the other extracted samples, the shade-dried peel had higher antioxidants, according to the results. Therefore, the current study concluded that using peel in the formulation can reduce the wastage of the fruit. Additionally, the extract can be employed for in vivo experiments on antioxidant properties.

Keywords: *Actinidia deliciosa, ascorbic acid, RP-HPLC, iodometric titration, Chinese gooseberry, kiwi.*

PT/ST2/0013

DEVELOPMENT OF A NOVEL 1,8-NAPHTHYRIDINE DERIVATIVES AS ANTICANCER AGENT

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The most prevalent gender-specific diseases affecting women globally are breast cancer, ovarian cancer, bone cancer, and cervical cancer. Many cellular and enzymatic pathways are currently recognised as potential therapeutic targets for the treatment of cancer. Although there have been significant advancements in the treatment of different types of cancer, the main drawback of the anti-cancer medications now on the market is their non-selective behaviour towards both cancer cells and normal cells. The present study was conceived to develop a novel 1,8-naphtyridine derivative and evaluate its anticancer activity in human ovarian cancer cell lines PA-1, by SRB assay. All of the 1,8-naphthyridine derivatives synthesized by Gould–Jacobs reaction followed by alkaline hydrolysis and N-alkylation, and were evaluated *in- vitro* for their anticancer properties against human cancer cell line. Compound **VG4B** (N-benzyl-1,8-naphthyridine-3-carboxylic acid) exhibited the maximum cytotoxic effect against cancer cell line PA-1 as compare to positive control Adriamycin (Doxorubicin) a known anticancer drug with IG50 value < 10. The *in-vitro* anticancer results showed that 1,8-naphtyridine derivative (**VG4B**) could be a potential anticancer agent in future.

Keywords: *1,8-Naphthyridine, Anticancer activity, cancer cell line PA-1, Gould–Jacobs reaction,* ovarian cancer,

PT/ST2/0014

BIOANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF ROTIGOTINE HCL AND RASAGILINE MESYLATE IN HPLC-UV

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Rotigotine HCl and Rasagiline mesylate are belongs to class of anti-parkinsonian drugs. The work presented is development of precise, simple, and sensitive validated method for detection of both drugs in human serum. A blank serum solution was used to prepare samples. The developed method shows linearity with concentration range of 0.5-1.5µg/ml of each drug in plasma with 0.999 value of regression co-efficient. Accuracy was performed by using spiking method hence it can be considered as recovery study with no matrix effect. The method shows 99.3-100.6% recovery in human plasma. Relative standard deviation of intra-day precision, inter-day precision, accuracy, repeatability and linearity was found to be less than 2%. The value of LOD and LOQ were found to be 0.02 µg/ml and 0.05 µg/ml respectively. Robustness of method was performed by changing flow rate of mobile phase, wavelength, and column with 1µg/ml concentration of each drug. Results can conclude that method is precise, specific, sensitive, and robust. The validated method can be used in future for quantification of both the drugs in human plasma if combination approach is used in treatment of Parkinson's Disease.

Key words: Rotigotine HCl, Rasagiline mesylate, Bioanalytical method, in HPLC-UV, human plasma

PT/ST2/0017

DESIGN AND SYNTHESIS OF MDR-TB INHIBITORS

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Mycobacterium tuberculosis (MTB) infection has become an increasing health threat due to the worldwide emergence of multi-drug resistant MTB (MDR-MTB) Strain. Isoniazide create resistance problem, it is complex process and is associated in mutations in several genes including katG, acpM, inhA, kasA and ahpC. However, the emergence of INH resistant *M. tuberculosis* strains dictates the necessity of re-designing this old drug in order to create analogues effective against INH resistant strains by using rational approach to design pyridine analogue. In light of these findings the present study deals with the modification in isoniazide structure to combat the problem of Multi-Drug Resistances Tuberculosis. The attempt to synthesize and evaluate the biological activity of isoniazid and pyridine derivatives was successfully carried out with elaborate characterization by spectral data. Among the synthesized compounds KC-5 and KC-31 showed promising antimycobacterial activity with a MIC value of 12 µM and 7.6 µM and IC_{50} value of 7.8 µM and 6.6 µM respectively. SAR study indicate that the cyclopropyl ring of quinazoline side substitution exhibited most promising anti-mycobacterial activity compared to the ethyl and furyl substitution on parent pyridine (KC-31, KC-32 and KC-33).

Keywords: *Tuberculosis, Isoniazid, Resistance, Analogues, antimycobacterials*

PT/ST2/0019

INSILICO ANALYSIS AND DRUG REPURPOSING: A PARALLEL WAY FOR DEVELOPMENT OF BROAD SPECTRUM ANTIVIRAL AGAINST CORONA INFECTIONS.

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Coronaviruses has led to the spread of severe respiratory disorders from last two decades across the globe. SARS- CoV, MERS-CoV, and SARS- CoV-2 are among the pathogens included in the World Health Organization's list of high-priority threats. Considering the time constrains and cost effectiveness virtual screening of repurposing drugs and drug candidates along with antiviral fragment screening against multiple targets allows identification of broad-spectrum potential leads. In the existence pattern of CoVs, the Mpro and RdRp are vital targets, which are conserved among various CoVs. In the present work the molecules that are already being approved or under clinical scrutiny as antiviral agents and fragments are explored via molecular modeling which includes pocket modelling, molecular docking and pharmacophore identification. The overall finding of the study reveals some potential candidates which were found to interact with more than two targets *i.e.* not only with Mpro of SARS CoV-2 but also SARS CoV , other viral RdRps and SARS CoV-2 nsp 12. Pocket modeling study reveals the important aminoacid residues present in the binding pocket of target protein. *Insilico* analysis and drug repurposing will open new avenue for broad spectrum antiviral drug design and development.

Keywords: *Insilico, repurposing, antiviral, CoVs, Mpro, RdRp.*

Abbrevations: Mpro: Main protease, RdRp: RNA dependent RNA polymerase.

PT/ST2/0021

SEPARATION, CHARACTERIZATION OF POTENTIAL IMPURITY IN PYRIMETHAMINE AND ASSESING ENZYME BINDING STUDIES BY DOCKING

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Work has been demonstrated the usefulness by using RP-UFLC and combining liquid chromatography with triple quadruple mass spectroscopy (LC-MSMS) methodology for rapid identification of unknown impurity in the drug Pyrimethamine. The RP-UFLC method has been developed for the separation and quantification of the unknown impurity in Active Pharmaceutical Ingredient (API) Pyrimethamine and characterised by LC-MSMS and NMR spectroscopy. The low pressure isocratic mode has been used for the separation using Phenomenex Hyperclone BDS C18 (5.0mm, 250x4.6mm) column, mobile phase composed of ammonium formate buffer pH 3.6 adjusted with formic acid (B) acetonitrile (A) (5:95v/v) with 1.2 ml/min flow rate.The client was monitored at 276 nm.The retention time of Pyrimethamine and unknown impurity is 5.5 and 3.11 min respectively. Unknown impurity is separated by preparative HPLC and characterised by LC-MSMS, HNMR and 13CNMR spectroscopy. Chemical name and molecular mass of impurity is N2-(4-amino-6-ethyl-5-phenylpyrimidin-2-yl)-6-ethyl-5-phenylpyrimidine-2,4-diamine 411g/mol. Enzyme binding studies has been assessed by using drug design software to predict the toxicity of impurity.

Keywords: *RP-UFLC, ICH guidelines, Pyrimethamine, LC-MS/MS*

PT/ST2/0022

UFLC/LCMSMS METHOD OF IMPURITY PROFILING IN PARGEVERINE HYDROCHLORIDE, CHARACTERIZATION, ASSESSMENT OF IN-SILICO ENZYME BINDING AND ADMET STUDIES OF IMPURITY

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ADME, toxicity and enzyme binding studies have been assessed on identified and separated impurity in Pargeverine hydrochloride (PGV) using drug design software. An easy uncomplicated, precise method has been developed, quantified and validated for impurity profiling using RP-UFLC and LCMSMS method. The chromatographic separation was established using Phenomenex Hyperclone BDS C18 column with gradient elution mode of mobile phase composed of 0.1% Formic acid pH 4.5 and Acetonitrile (90:10v/v) with 1.0 ml/min flow rate and the eluent was examined at 219 nm, the optimized conditions efficiently separate PGV and impurity. The separated impurity was characterized by LCMSMS, HNMR and 13CNMR spectroscopy. The interference of identified process related impurity chemically it is 2-(dimethyl amino) ethyl 2-((2-chloroally) oxy)-2,2-diphenylacetate with molecular formula of $C_{21}H_{24}ClNO_3$ and molecular weight of 374m/z and its interference with the Pargeverine for binding to enzyme to exert its action was assessed by docking studies using Sybyl-X 2.1.1 drug design software. For the docking studies two key enzymes viz. amino transferase (6T8Q) and gamma glutamyl transferase, are used, the binding score of Pargeverine and impurity is -54.0377kcal/mol, -42.067 kcal/mol respectively. The forced degradation studies is subjected to assess the route impurity formed, it is process related impurity and finally the method is validated following guidelines in presence of related substances.

Keywords: *Molecular docking, Gradient mode, LC-MS/MS, Impurity Profiling.*

PT/ST2/0023

VALIDATED LC-MS/MS METHOD FOR THE DETERMINATION OF COPANLISIB ON MOUSE DRIED BLOOD SPOTS

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Dried blood spot (DBS) methodology is becoming a valuable tool in recent times for the quantitative analysis of various drugs. Copanlisib is a dual PI3K-δ inhibitor, being used in follicular lymphoma treatment. In this research, we report a validated LC-MS/MS method for quantifying copanlisib from mouse dried blood spot (DBS). We validated the method in-line with the FDA. Liquid-liquid extraction technique was used to extract copanlisib from the DBS discs. We used Atlantis dc 18 and isocratic mobile phase for the chromatographic separation of copanlisib and the internal standard (idelalisib). The flow was 0.90 mL/min. In the optimized chromatographic conditions, the retention of copanlisib and the internal standard was ~0.98 and 0.93 min, respectively. Each injection total run time was 2.50 min. The MS/MS ion transitions monitored were *m/z* 481.31→128.00 and 416.10→176.10 for copanlisib and IS, respectively. We have used broad calibration range (1.01-4797 ng/mL) with a determination coefficient (r^2) of 0.997. All the evaluated parameters met the acceptance criteria. Haematocrit did not influence DBS copanlisib concentrations. We have used the validated method to derive the intravenous pharmacokinetic parameters by quantifying copanlisib in mouse plasma.

Keywords: *Copanlisib, LC-MS/MS, method validation, mouse blood, DBS, pharmacokinetics.*

PT/ST2/0024

SYNTHESIS, EVALUATION AND MOLECULAR DOCKING OF POTENTIAL ANTIDIABETIC AGENTS

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Diabetes is an extremely common disease, affecting diverse age range of people across the world. The disease kills more people every year than cancer and AIDS combined. Complications from diabetes can vary. There is no ideal drug available for the treatment, although some drugs belonging to biguanide, gliptins, sulphonyl urea class are available. Thiazolidinedi-2,4-dones is a class of oral insulin sensitizing moiety that improves insulin resistance. These are agonists of Peroxisome proliferator- activated receptor gamma (PPAR-γ). Presently available drugs of this class have several side effects. Recent studies have indicated that cardiovascular toxicity with rosiglitazone and increase in bladder cancer with pioglitazone are no longer drugs of choice. To obtain better and safe thiazolidinediones, we have attempted modification by introducing suitable substituents at C-5 of thiazolidinedione nucleus. A novel series of thiazolidinedione derivatives have been thus synthesized. The structures of these compounds were established by IR, 1H-NMR and Mass spectrometry. The acute oral toxicity test of these molecules were performed and found no toxic effect even at 2000mg/kg of drug. Three compounds are being tested in vivo for antidiabetic activity in swiss albino mice. The synthesized compounds were then docked with the PPAR-γ (PDB ID : 2PRG) using AutoDock Vina software. The results indicated interaction with Gly278 and Leu238 comparable with rosiglitazone. Among all the synthesized compounds, three derivatives; 5(2-pyridynylbenzylidene)-2,4-thiazolidinedione, 5(3,4-dimethoxybenzylidene)-2,4-thiazolidin-edione and 5(2,3,4-trifluorobenzylidene)-2,4 thiazolidinedione have similar amino acid interaction as rosiglitazone.

Keywords: *Thiazolidinediones, Synthesis, Activity Evaluation, PPAR-γ, Molecular Docking*

PT/ST2/0025

SYNTHESIS AND IN VITRO ANTICANCER ACTIVITY OF NOVEL PYRAZOLE SUBSTITUTED CHALCONES

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Chalcones are widely present plant derived polyphenolic compounds. They exhibit various biological activities such as anticancer, antibacterial, antifungal, antiinflammatory and antioxidant properties. The present study is based on the rational approach, where the phenyl group of chalcone was conveniently replaced by pyrazole ring following bioisosteric modification as one of the tools for lead modification. The synthesized test compounds were first checked for purity by thin layer chromatography and melting point and then purified by column chromatography. All the synthesized compounds were then characterized by infrared (IR), 1H-NMR, and LC-MS spectral studies. Anticancer evaluation of the synthesized derivatives was carried against MCF-7 (human breast carcinoma) cell line. Compound JR110, JR104 and JR107 showed better growth inhibitory effects on cancer cell.

Keywords: *Chalcone, Anticancer activity, MCF-7 cell line, Bioisosteric modification.*

PT/ST2/0026

DESIGN & SYNTHESIS OF NOVEL 4-(3-CHLOROPHENYL)-5-PHENYL-4*H*-1,2,4-TRIAZOLE DERIVATIVES AS POTENTIAL RENIN INHIBITORS TO TREAT HYPERTENSION

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Hypertension has become an extensive pitfall that leads to various cerebrovascular and renal disorders such as coronary heart disease, heart failure, peripheral artery disease, kidney failure, and stroke due to which more than 1 billion people have been affected worldwide. Renin is considered as a potential target for more than five decades as it is considered a rate-limiting step in the RAAS axis. After a lot of research and hard efforts, aliskiren was invented as the first, orally active, non-peptide renin inhibitor which was successfully marketed by clearing all phases of clinical trials. But its poor bioavailability less than 2% provides us an area to investigate a newer approach for the synthesis of compounds with improved activity. Reported studies showed the incorporation of secondary or tertiary amines into the structure leads to an increase in the bioavailability as well as the efficacy of molecules. Herein, we report the synthesis of some 4-(3-chlorophenyl)-5-phenyl-4H-1,2,4-triazole derivatives and their in-silico studies. Synthesized compounds were analyzed by IR, 1H-NMR, 13C-NMR, and Mass spectroscopy. Docking studies were carried out using BIOVIA Discovery Studio 2019 for all the synthesized compounds using the protein crystal structure of renin with inhibitor Aliskiren (PDB ID: 2V0Z). All the compounds exhibited good binding properties with the receptor in particular compound (10b) showed the maximum (-) c docker interaction energy of 46.7594. Out of all the synthesized compounds, PS-008 (b) has shown 56% inhibition at 1nM concentration by Renin inhibition assay.

Keywords: Hypertension, renin, direct renin inhibitors.

PT/ST2/0027

METHOD DEVELOPMENT AND VALIDATION FOR SIMULTANEOUS ESTIMATION OF TRIAMCINOLONE AND ETODOLAC BY RP-HPLC METHOD IN DUAL DRUG LOADED SOLID LIPID NANOPARTICLES

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A sensitive reverse-phase high performance liquid chromatography method was developed for simultaneous estimation of both drugs in SLNs. Effective chromatographic separation of Triamcinolone and Etodolac was obtained on a Phenomenex C-18 column using an isocratic elution mode with a mobile phase combination of Acetonitrile, methanol, and 0.1% OPA. The mobile phase flow rate was 1 ml/min, the column temperature was 50 ° C., and the injection volume was 20µl. Triamcinolone and etodolac had retention times of 3.69 and 5.3 minutes, respectively and were identified by using UV detector at 231nm.

The developed analytical technique has a linearity range of 1-64µg/ml for triamcinolone and 1-64µg/ml for etodolac, with R^2 values of 0.9998 and 0.997, respectively, for triamcinolone and etodolac. The detection limit and limit of quantification were found to be 0.5µg/ml and 0.2µg/ml, 0.675µg/ml and 0.825µg/ml respectively with a % recovery of 97.5 and % drug entrapment efficiency of both the drugs are found to be 88.95% and 79.8105%, respectively. Method validation was performed according to ICH Q2 (R1) guidelines for system suitability, specificity, linearity, precision, accuracy, LOD, LOQ, and robustness.

KEYWORDS: Triamcinolone, Etodolac, Simultaneous Estimation, UV Detection

PT/ST2/0028

DESIGN, SYNTHESIS, *IN SILICO* ANALYSIS, RADICAL SCAVENGING AND ANTIDIABETIC ACTIVITY OF CERTAIN 2,3-DISUBSTITUTED THIAZOLIDIN-4-ONES

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Diabetes occurs either when deficiency of insulin or body cannot effectively utilize it. Oxidative stress has a role in the development of diabetic complications and hence antioxidants are of great value in suppressing them. Thiazolidinone compounds have been known for antidiabetic and free radical scavenging activities. Therefore, it was planned to synthesize some thiazolidin-4-ones as probable antioxidant and antidiabetic agents. A series of 2,3-disubstituted thiazolidin-4-ones 4a-n were synthesized from Schiff bases 3a-n by reaction with thioglycolic acid. The compounds were characterized by spectral data. The compounds 4a-n were screened for DPPH radical scavenging and compounds 4e, 4h, 4i and 4n exhibited moderate activity. The compounds 4e, 4h, 4i and 4n were found to be safe at the dose of 2000mg/kg b.w. *p.o* in acute toxicity, they were tested at 200 mg/kg and 4e at 50mg/kg b.w. orally for antidiabetic activity in fructose induced diabetic rats. The compounds exhibited highly significant activity compared to control. Pioglitazone was used as standard drug. The tested compounds exhibited better and significant serum cholesterol lowering activity when compared with control and standard and also reduced triglyceride level after 21st day however; it was insignificant when compared to control. The tested compounds reduced elevated body weight but it was insignificant compared to control. The compound 4n displayed highest and similar binding affinity followed by 4e, 4h, 4i when compared with pioglitazone in docking with PPAR-γ. The physicochemical, drug likeness and ADME properties of title compounds were also found to be satisfactory.

Key words: *Schiff bases; DPPH; antioxidant; serum glucose; serum total cholesterol; serum triglycerides; PPAR-γ; ADME; Drug Likeness*

PT/ST2/0030

SYNTHESIS, SPECTRAL CHARACTERISATION AND SCREENING OF SCHIFF BASE ZINC METAL COMPLEXES OF 7-AMINO-4-METHYLCOUMARIN DERIVATIVES AS POTENTIAL ANTICANCER AGENTS

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The current study focuses on the synthesis and anticancer activity of Schiff base zinc metal complexes of 7-amino-4-methylcoumarin derivatives. Title compounds were prepared by four step reaction. Initially, the reaction of m-aminophenol with Ethyl acetate and Ethyl chloroformate resulted in the synthesis of substituted urethane. The resulting product was further condensed with Ethyl acetoacetate and sulphuric acid to yield 7-carbethoxyamino-4-methyl benzopyran-2-one, which was then treated with substituted aldehydes to produce the (IIa-IIk) schiff base compounds. The produced derivatives were dissolved in a combination of methanol and metal chloride, and the pH was adjusted using dilute ammonia. The product was produced by stirring at 25°C and then filtered, yielding metal complexes (IIIa-IIIk) of coumarin schiff derivatives. The purity of all the synthesized compounds were confirmed by melting point and TLC. The structure of all these compounds was confirmed by FTIR, NMR and Mass spectral analysis. Further these final compounds produced (IIIa-k) were screened for cytotoxicity using the MTT assay on lung cancer cell lines (A549). Results of anticancer activity reveales that the compounds IIIa, IIIf, IIIh and IIIj showed comparable activity against standard drug cisplatin. Further enhancement in the activity can be achieved by slight modifications in the ring substituent.

Keywords: *Coumarin; Zinc metal complex; anticancer activity.*

PT/ST2/0031

SYNTHESIS, SPECTRAL CHARACTERIZATION AND *IN-VITRO* ANTI-TUBERCULAR ACTIVITY SCREENING OF NOVEL 1,2,4-TRIAZOLE DERIVATIVES

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This research work was carried out with an objective of synthesizing novel 1,2,4-Triazole and determining their anti-tubercular activity. A New series of 1,2,4-triazole derivatives were synthesized using an appropriate synthetic route which involves the production of Schiff base by reacting aniline and benzaldehyde. Further, the Schiff base is refluxed with urea in presence of an acid to give 1,2,4-triazole derivatives. The purity of all the synthesized compounds was confirmed by melting point and TLC. The structure of all these compounds was confirmed by FTIR, NMR, and Mass spectral analysis. All the synthesized compounds (II-IIg) were screened for Anti-tubercular activity using the MABA method against *Mycobacterium tuberculosis* H37Rv Strain by comparing with the standard drug Isoniazid. Anti-tubercular activity results showed that compound IId and IIe exhibited very good activity compared to the standard drug. While compound IIa. IIf and IIg showed moderate activity. The present study provides data for the medicinal chemist to take up the research work in the development of anti-tubercular agents. Further enhancement in the activity can be achieved by slight modifications in the ring substituent.

Key Words: *Schiff base, 1,2,4-triazole, anti-tubercular activity. MABA Method*

PT/ST2/0032

SYNTHESIS, SPECTRAL CHARACTERIZATION AND ANTICONVULSANT SCREENING OF NOVEL QUINOLONE DERIVATIVES

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Present research work is carried out with an objective of synthesizing novel quinolin3e derivatives with potent anticonvulsant activity. The cyclocondensation of diphenylamine/N-methyl aniline with diethylmalonate gave 4-hydroxy-6-phenyl/methyl-2H-pyrano[3,2-c]quinoline-2,5(6H)-dione(Ia,Ib). These compound on alkaline hydrolysis yielded 3-acetyl-4-hydroxy-1-phenyl/methyl quinoline-2-(1H)-one (IIa/IIb). The hydroxyl group of these compounds were methylated using (CH3)2SO4 gave 3 acetyl-4-methoxy-1-phenyl/methyl quinoline-2(1H)-one (IIIa/IIIb). A series of 3-(3 substituted-prop-2-enoyl)-4-methoxy-1-phenyl/methyl quinoline-2(1H)-one derivatives (IVa-h) were prepared by Claisen-Schmidt condensation of 3-acetyl-4-methoxy-1 phenyl/methyl quinoline-2(1H)-one with different aromatic aldehydes. The title compounds 3-(2-amino-4-phenyl pyrimidin-5-yl)-4-methoxy-1-phenyl/methyl quinoline-2(1H)-one derivatives (Va-h) were obtained by cyclization of 3-(3- substituted-prop-2-enoyl)-4 methoxy-1-phenyl/methyl quinoline-2(1H)-one derivatives (IVa-h) with guanidine hydrochloride in dry methanol in the presence of sodium methoxide. The purity of these compounds was ascertained by TLC. The structures of the newly synthesized compounds were confirmed by UV, IR, 1H-NMR and Mass spectroscopy. All the newly synthesized compounds were screened for anticonvulsant activity in mice using MES model. Result of anticonvulsant activity reveals that the compound Vb, Vc and Ve showed promising anticonvulsant activity at 200mg/kg dose as compared to standard drug phenytoin. Further enhancement in the activity can be achieved by slight modifications in the ring substituent by using in-silico technique.

Keywords: *Quinolone, anticonvulsant activity, MES model, Phenytoin.*

PT/ST2/0033

SYNTHESIS SPECTRAL CHARACTERISATION AND INVITRO ANTI-OXIDANT SCREENING OF SOME NOVEL 2-HYDROXY QUINOLINE DERIVATIVE

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With an objective of synthesizing some novel anticonvulsant activity having compounds, here we have reported a series of novel quinoline derivatives. 7-methyl or 8-methyl substituted 2-hydroxy quinoline-3-carbaldehyde (II a, b) on treatment with different substituted hydrazides yielded the novel Schiff bases of quinoline III (a-f). The structure of all newly synthesized compounds was confirmed by spectral study such as IR. 'H NMR, 13C NMR and mass spectroscopy. All the synthesized compounds were screened for antioxidant activity by free radical scavenging activity by DPPH assays method and ferric ion reduction method using ascorbic acid as the standard drug. Compounds III b, III d and III f showed significant antioxidant activity. Further enhancement in the activity can be achieved by slight modifications in the ring substituent.

Key Words: Quinoline, antioxidant. DPPH method, ferric ion reduction method, ascorbic acid.

PT/ST2/0034

COMPUTATIONAL INVESTIGATION AND INTERACTION STUDY OF PHYTOCONSTITUENTS FROM *HEDYCHIUM* SPECIES WITH G-PROTEIN COUPLE RECEPTOR

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Natural extracts obtained from Hedychium species are known for multi-furious activities. Extracts are effective as anti-inflammatory, in skincare and have the potential to manage carcinoma like breast cancer. Study is inspired by traditional herbal medicine, which uses extracts of various parts of plants for therapies. Artificial Intelligence /Machine Learning (AI/ML) approaches were employed to standardize and identify the specific activity and physicochemical characteristics of selected compounds present in the extract. In-silico approach combines phytochemical selection from plants, target prediction, molecular docking, molecular dynamics simulation, ADMET profiling, and specification. A set of chemical constituents obtained from Hedychium species were screened from data based on solvent extraction and isolation. Compounds were evaluated with G-protein coupled receptor which was selected based on target prediction, involvement of GPCR with inflammatory expression, and anticipation with immune response. Compounds were examined for binding affinity with GPCR and found significant minimum binding affinities ranging from (-11.17) to (-5.31) in molecular docking. A pharmacokinetic study of molecules was conducted to predict their ADMET descriptor, and MD simulation study was conducted to predict their ligand-protein complex binding stability. Results shown that ligand-protein complexes of these molecules were stable with minimum binding energy. The molecules had a good ADME/tox profile and can be considered bioavailable compounds. The study concludes that AL/ML approaches help to find out the pharmacological specificity of compound/extract obtained from plants. Biomarkers obtained from Hedychium species could be employed as modulators of GPCR and they could be used to manage pain, inflammatory diseases, and immune modulators.

Keywords: *GPCR, Hedychium, molecular docking, ADMET descriptors, molecular dynamics*

PT/ST2/0035

ANTIMICROBIAL PEPTIDES

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All kingdom of life includes antimicrobial peptide (AHPS), which one a crucial part of host defense system. They mostly consist of short cationic peptide with range targets and architectures. AHPS have recently generated great deal of interest as possible therapeutic agent due to the constantly evolving resistance of different infection to current antimicrobial medicines. Numerous, AHPS specific data base have been created gather both basic and pharmacological data as identification of new AHPS has grown. We also review the available AHPS datasets contrast useful computational techniques for predicting antimicrobial activity and mechanism of action and highlight navel machine learning strategies can be utilized to enhance AMP activity. In general peptide show great potential as key component of new supramolecular structures. They may become crucial in the development of vaccine, antimicrobial chemotherapy, cancer immunotherapy the preservation of food, GV green transplant the design innovative materials for use in dentistry the development of labels formulation other significant strategic uses. This work explore how new formulation can boost bioavailability and safeguard activity antimicrobial peptides which can both increase their therapeutic index, within the confines of nanotechnology variety of innovative formulation utilizing lipids, liposomes, nanoparticles, polymers etc. Offer unique application antimicrobial chemotherapy.

KEYWORDS: *antimicrobial peptide, nanoparticles, bilayer disks or fragments, biocompatible polymers.*

PT/ST2/0036

A RATIONAL SEARCH FOR REPURPOSE DRUGS/PHYTOCHEMICALS FOR THE TREATMENT OF GOUT USING SHAPE AND ATOM-BASED SIMILARITY STUDIES (SASS) ON BIOACTIVE CONFORMATION OF FEBUXOSTAT

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Gout is an inflammatory arthritis. It results from sustained hyperuricemia (serum uric acid ≥360 µmol/L), that ends up in intra or peri-articular monosodium urate crystal deposition. High serum urate concentration or Hyperuricemia is the most important risk factor for the development of gout. Xanthine oxidase is a versatile molybdoflavoprotein involved in the metabolism of purines, plays an important role in hyperuricemia. The purine analogues like allopurinol, oxypurinol, tisopurine, pterine, 6-formylpterine while non -purine analogues like febuxostat, topiroxostat, pyranostat are potential xanthine oxidase inhibitors use in the treatment of Gout. Febuxostat is a promising drug candidate with advantage of having lower dosage in comparison with the allopurinol (300 mg/day) due to its selectivity toward xanthine oxidase. Febuxostat is generally safe and well tolerated but the most commonly reported adverse reactions are liver function abnormalities, diarrhea, headache, nausea, and rash that restricts its wide applications. Therefore, there is a need to identify better option that can overcomes current drug issues and can provide better treatment option. One of the promising strategies for drug discovery includes repurposing with wholly unique scaffolds while maintaining the geometry and electrostatic requirements of existing drug. Thus, pharmacokinetics and toxicology issues of existing drugs can be address without compromising its pharmacodynamics. The current study focuses on shape and electrostatic similarity investigations based on the bioactive conformation of Febuxostat for logical search of repurposed drugs or Phytochemicals to treat gout.

Keywords- *Gout, Xanthine Oxidase Inhibitors, Febuxostat, Hyperuricemia, shape-based similarity.*

PT/ST2/0037

SYNTHESIS, SPECTRAL CHARACTERIZATION, IN-SILICO AND IN-VITRO ANTI-TUBERCULAR ACTIVITY SCREENING OF NOVEL IMIDAZOLE-THIADIAZOLE DERIVATIVES

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With an objective of synthesizing some novel anti-tubercular agents, the present research work focuses on the design and synthesis of novel 2-benzhydryl-6-(4-substituted phenyl) imidazo[2,1-b] [1,3,4]thiadiazole derivatives by incorporating the two different substituted moieties together by reaction of 5-benzhydryl-1,3,4-thiadiazole-2 amine with appropriate a haloaryl ketones. Formed products (2a-f) further subjected for reaction with different secondary amines such as morpholine, pyrrolidine and piperidine with formaldehyde, acetic acid in methanol, resulting in the formation of target products (3a1-a6 and 3c1-c6). Structures of all synthesized compounds were confirmed by physico-chemical and spectral data (IR, ^{1}H-NMR, 13C-NMR and Mass spectras). Further all the synthesized compounds were screened for anti-tubercular activity by MABA method using Mycobacterium tuberculosis H37Rv strain and standard drug Isoniazid. Compounds 3a2, 3a6, 3b2, 3b4 and 3b5 were found to be more effective with MIC value of 12.5 ugm/mL. To enhance in vitro efficacy of these synthesized compounds. Molecular docking experiments have been performed with pantothenate synthetase and cyclopropane mycolic acid synthase for Tuberculosis with docking scores 7.142 and-7.248 Kcal/mol. These results might be useful for medicinal chemists to develop potent anti-tubercular agents.

Keywords: *Imidazole-thiadiazole, anti-tubercular activity, MABA method*

PT/ST2/0038

DESIGN OF NOVEL PHYTOCHEMICAL-FOLIC ACID CONJUGATES AS ANTI-CANCER AGENTS

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Cancer is a major condition that is affecting the health of individuals worldwide. The conventional chemotherapy drugs currently employed are associated with several undesirable side effects, thereby requiring the design of newer anti-cancer agents. The present study focusses on the design of novel vitamin- phytochemical conjugates for treatment of cancer. Recent studies have shown that receptors involved in cellular internalization of vitamins are over-expressed in cancer cell. Hence, conjugates will specifically be internalized into the cancerous cells leading to sustained and targeted release of drug in cancer tissues through receptor mediated endocytosis reducing toxicity effects. In- silico study of phytochemical-folic acid conjugates were carried out using Autodock Tools on the human folate receptor alpha in complex with folic acid, PDB ID: 4LRH.The structure based drug likeness property, ADME/T and pharmacokinetic predictions were performed using Swiss-ADME and SMARTcyp online server. Six ligand molecules which include berberine- folic acid conjugate, Quercetin- folic acid conjugates (QC- folic acid conjugate 1, QC- folic acid conjugate 2), and curcumin- folic acid conjugates (CUR- folic acid conjugate 1, CUR- folic acid conjugate 2, CUR- folic acid conjugate 3) were selected in this study. Docking studies revealed that the Berberine- folic acid conjugate and QC-folic acid conjugate 1 displayed highest binding energy of -11.2 and -12.0 Kcal/mol respectively compared to standard folic acid docked (-10.6 Kcal/mol) within the binding site of folate receptor. Based on the insilico and pharmacokinetic screening, the QC- folic acid conjugate was identified as the lead for further synthesis and cytotoxicity studies.

Keywords : *Human folate receptor, Phytomolecule- folic acid conjugate, Anti- cancer agent, In silico studies, Receptor mediated endocytosis.*

PT/ST2/0039

PROTAC: A NEW PARADIGM IN DRUG DISCOVERY

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In 2001, new technology is reported in which heterobifunctional molecule that hijacks the body's own natural disposal system to initiate selective degradation of protein of interest (POI) is called PROteolysis TArgeting Chimeras (PROTAC). Through the ubiquitin-proteasome system (UPS), it promotes ubiquitination and breakdown of target proteins using bifunctional small molecules.The aim and objective of this study to ascertain the importance of PROTAC as a new paradigm in drug discovery.The PROTACs include linker, ligand (Warhead) to bind with the POI for degradation, and ligand (Anchor) for recruiting an E3 ubiquitin ligase enzyme. Therefore, PROTACs have a significant potential to degrade "undruggable" protein targets, which are not limited to the physiological substrates of the UPS. The PROTAC can recruit E3 for POI ubiquitination, which is followed by proteosome-mediated breakdown, upon binding to the POI. PROTACs exerts their inhibitory effects via Event-driven pharmacology, therefore lower concentration of PROTAC can be given in order to produce a therapeutic response, reducing adverse effects and decreasing possibility of drug resistance.

By interacting with a POI that cancer cells are highly dependent on, targeted cancer therapeutics suppress cancer proliferation and progression in contrast to traditional chemotherapeutics that non-specifically inhibit cell proliferation, including that of normal cells, and have undesirable toxicities and side effects.

PROTACs not only provide unique chemical knockdown tools for biological study in a catalytic, reversible, and quick manner, but also have the potential to be used as clinical treatments for diseases like cancer, immunological disorders, viral infections, and neurological diseases.

Keywords:- *PROTAC, Prostate Cancer, Ubiquitin ligase enzyme, protein degradation.*

PT/ST2/0040

DESIGN OF NOVEL BM212 ANALOGUES AS THE POTENTIAL INHIBITORS OF MYCOBACTERIUM MEMBRANE PROTEIN LARGE 3 (MMPL3) USING SCAFFOLD HOPPING-SHAPES BASED SIMILARITY-MOLECULAR DOCKING APPROACH

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Tuberculosis is a major health problem worldwide, with approximately 1.5-2 million people dying annually due to this disease. Laborious and lengthy treatment of TB brings with it dangers of noncompliance, significant toxicity and drug resistance. Apart from this deadly multi-drug resistance TB (MDR-TB) bacteria and HIV co-infection have resulted in resurgence in research efforts to address the urgent need for new anti-tuberculosis drugs. Deiddaet al. had identified BM212 a 1,5-diarylpyrrole derivative, with promising activity against multidrug-resistant clinical isolates of Mycobacterium tuberculosis and also against those residing within macrophages (MICs between 0.7 and 1.5 µg/ml). These results offered a ray of hope for the emergence of a new anti-tubercular agent, however it was soon realized that BM212 suffers from poor bioavailability and severe toxicity. In the pursuit of new derivatives of BM212 with improved pharmacokinetics and toxicity profile, optimization strategies were focused on modification of the 1,5-diphenyl substituent and the side chain at the 3-position of the pyrrole ring. Several BM212 analogues like BM521, BM533, BM579 were synthesized with good biological profiles (MIC ranging from 0.2 to 0.12 µM) and comparatively better Protection Indices (PI = CC50/MIC, ranging from 127.5 to 1937.5) than BM212, but suffer from high HepG2 toxicity. To further augment the safety and efficacy profile of BM212 and develop potent antitubercular agents by exploring diversity in the chemical space of BM212, we embarked on the Scaffold hopping-Shape based similarity-Molecular Docking approach to seek a replacement for the central pyrrole ring with various heterocycles in BM212.

Keywords: *Antitubercular agent, BM212, Scaffold hopping, Shape based similarity, docking.*

PT/ST2/0041 PAID

REVIEW OF THE DERIVATIVE UV SPECTROSCOPY METHOD FOR SIMULTANEOUS ESTIMATION

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The review article discusses Derivative UV-theoretical Spectrophotometry's aspects. The first and second derivatives of the transmission spectra with respect to wavelength are crucial for understanding the method's importance. The generated optical derivatives and the recognised numerical derivatives are compared. This leads to a discussion of the first through fourth derivative spectra. This sheds important light on the use and restrictions of this method for chemical analysis. measurement strategies Various techniques for getting derivative spectra are covered. On the smoothness of derivative spectra and the signal-to-noise ratio, the degree of polynomial fit is described. It is demonstrated how to use UV derivative spectrometry to determine single and multicomponent analyses. Potentially derivative spectrophotometry enhances the determination's shown selectivity and sensitivity.

Keywords : First Order Derivative spectroscopy, Derivative UV-Spectrophotometry.

PT/ST2/0042

INSILICO DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF NOVEL INDOLE GLYOXYLAMIDE DERIVATIVES AS POTENTIAL ANTICANCER AGENTS

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The tumor suppressor protein p53 is an important cancer therapeutic target. The protein p53 its function is inhibited through interaction with the Murine Double Minute oncoprotein.
The main aim and objective of this present work is to use computational techniques to find for new MDM2-P53 inhibitors and synthesize lead molecules of 2-aryl Indol-3yl glyoxylamide to evaluate their antioxidant and anticancer activity and to design and screen indole glyoxylamide derivatives followed by carrying out docking studies using autodock software. From the docking results the least binding energy of lead molecules and based on chemical availability to synthesis 16 potent 2-aryl Indol-3yl glyoxylamide and characterized by IR,1HNMR and MASS spectroscopy. The purity of the compound is determined by TLC and MP. The synthesized lead molecules were evaluated their antioxidant and anti-cancer activity by DPPH and MTT assay respectively. The least binding energy was found to be in good agreement with the anticancer activity. The selected lead molecules obey the Lipinski rule of five it reveals that the ligand have better bioactivity
Among all the lead molecules IG-21, IG-25, IG-27, IG-31 and IG-55 exhibited potent cytotoxicity activity against DU-145 and PC-3 compared to the reference drug, paclitaxel and also reduces the oxidative stress. Insilco drug design showed that the selected ligand could be as potential MDM2-p53 inhibitors. The study concluded that all glyoxylamide 2-aryl indole derivatives will be significant lead of antioxidant and anticancer agents.
Key words: Auto dock, MDM2-p53 inhibitors, DPPH, MTT.

PT/ST2/0043 PAID

ASSESSING THE POTENTIAL OF VITAMIN DRUG CONJUGATES FOR ITS ACTIVITY AGAINST SARS-COV-2 INFECTION

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The new corona virus infection has quickly spread over the world, turning it into an epidemic. Therefore, the necessity for treatment for those with COVID-19 is essential. The term "Vitamin Drug Conjugate" has been highlighted here as a potential therapeutic strategy for SARS-COV-2 infection.
The aim and objective of this study was to explore vitamins as prospective therapeutic agents against the covid-19 infection because of their antibacterial, antioxidant, and immunomodulatory properties.
In order to provide an effective treatment against SARS-CoV-2 infection by improving therapeutic effect via synergistic mechanism, conceal undesirable side effects, and promote cellular internalisation, we synthesized Hydroxychloroquine -Folic Acid conjugate (HCQ-FA) by a steglich esterification reaction technique, by using bio cleavable linker which is used to combat COVID-19 with folic acid. Spectroscopic parameters such as IR, NMR, and mass spectra are used to determine the structure of the conjugate, and this analysis suggests that the HCQ-FA conjugate was synthesized through esteric conjugation.
Molecular dynamic stimulation studies revealed that HCQ-FA conjugate show good dock score as well as good stability. So it was proved that HCQ-FA conjugate shows greater binding to the target protein to minimise side effects and with improved biological activity.
According to molecular docking experiments, the primary protease moiety exhibits good docking and binding interaction with the HCQ-FA conjugate. Because of their synergistic modulation of the immune response and their combined therapeutic actions on the viral protein, our finding suggest that the combination produced may be a useful choice for the treatment of Covid-19 disease.
Key words: *Vitamin drug conjugate, SARS-COV-2, Hydroxychloroquine, Folic acid, Molecular modelling, Molecular Dynamic stimulation.*

PT/ST2/0044

HPTLC BIOAUTOGRAPHIC METHOD FOR SCREENING PHYTOCHEMICALS OF *CYPERUS ROTUNDUS* AGAINST PANCREATIC LIPASE AN ANTI-OBESITY TARGET

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Bioautography is a novel rapid screening and standardized approach used to evaluate *in – vitro* activity such as antioxidant, anti-diabetic, antibacterial, antimicrobial and anti-lipase. It is combination of planar chromatography with enzyme assays which enables quick searching of biologically active compounds in the complex mixtures specifically herbal extracts. A novel bioautographic method was developed and optimized to evaluate anti- lipase activity of plant extract and its phytoconstitutents. Direct bioautographic method was used to study anti-lipase activity by dipping the developed plate in porcine pancreatic lipase enzyme solution and PNPB substrate solution. The plate was then exposed at 37^0C. To visualize lipase inhibition, bromothymol blue solution was used. Active bands showed white spot against greenish yellow colour background. Extracts of *Cyperus rotundus Linn*. rhizome powder were studied. HPTLC method was developed using precoated TLC aluminum plates with silica gel G60 F_{254} and Toluene: Ethyl acetate: Dichloromethane (4:1:5 v/v/v) with detection using densitometric scanning wavelength 254 nm using biomarker Limonene. The method gave well resolved peaks for limonene at R_f 0.75. The method was also validated as per ICH Q2R1 guidelines which showed R^2 value 0.99 for limonene in range of 420-2100 µg/ml. Recovery of limonene in extracts was found in the range of 99-101.7% and method was found to be precise with RSD less than 2%. Direct bioautography method showed white spot against greenish yellow background at R_f 0.48, 0.43, 0.40, 0.53 for pet ether, ethyl acetate, methanol and orlistat respectively. Limonene also showed coloration which confirms its in-vitro anti lipase activity.

Key words: *Bioautography, anti-lipase, HPTLC, Validation*

PT/ST2/0045

MOLECULAR DOCKING EVALUATION OF COMPOUNDS ISOLATED FORM *ZIZIPHUS RUGOSA* BARK FOR ANTIULCER ACTIVITY

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Ulcers are open sores on the skin or mucus membrane characterized by a superficial loss of tissue characterized by inflammation, mucosal bleeding and abdominal pain. The histamine H_2 receptor and H/K^+ATPase (proton pump) inhibitors play an important role in the regulation of gastric acid secretion. Therefore, they are main drug targets for the treatment of gastro esophageal reflux or peptic ulcer disease. *Ziziphus rugosa* Lam. is a wild medicinal plant of Rhamnaceae family and the plant bark was reported for anti-ulcer, astringent, antidiarrheal, anti-diabetic, anti-fungal, analgesic and anti-inflammatory activity. The present study explores the interaction of antiulcer compounds isolated form *Ziziphus rugosa* bark with human Histamine H_2 and H/K^+ ATPase receptor proteins. The stereochemical qualities of human Histamine H_2 and H/K^+ ATPase were assessed using the Ramachandran plot using PROCHECK. To investigate the binding mode and interactions of antiulcer compounds with receptors, molecular docking was carried out using AutoDock4.2. Among the four isolated compounds ligand [(4-[(E)-2-(5-ethyl-7-hydroxyquinazolin-2-yl)ethenyl]-2-methylcyclohexane-1-carboxylic acid] showed -8.26 kcal/mol binding affinity score with H_2 receptor and directly involved in the hydrogen bonding interaction Ser136 (2.07Å), Asp334 (1.77Å), Asp908 (2.14Å), Glu906 (2.92Å), and Lys907 (1.82Å). The ligand beutilinc acid showed binding affinity score of -6.68 kcal/mol for (H+ /K+ -ATPase) receptor, beutilinic acid docked complex shows that the residues Gln79 (1.91Å and 2.59) and Glu270 (2.10 Å) are involved in the hydrogen-bonding interactions. From these studies, it is established that *Ziziphus rugosa* has ulcer healing property as revealed by *in silico* studies.

Keywords: Antiulcer, molecular docking, Histamine H_2, H/K^+ ATPase receptor, AutoDock4.2.

PT/ST2/0046

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF MGO IN SYRUP FORMULATION

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Methylglyoxal (MGO) is an alpha-ketoaldehyde, a typical cellular metabolite with anticancer properties. By influencing glycolysis and mitochondrial respiration, it typically affects malignant cells while causing little to no harm to healthy cells. MGO is an unstable and reactive molecule and available as 40% aqueous solution. It undergoes oxidative polymerization upon air exposure, has tendency to auto-oxidation and susceptible to photolysis. MGO being non-chromophoric in nature needs derivatization before chromatographic analysis. So, the aim of the present study was derivatization and chromatographic method development for MGO and its analysis in syrup formulation. Derivatization of MGO was done using O-phenylenediamine which is a nucleophilic addition and elimination reaction. Derivatization reaction was optimized for time, pH, buffer and temperature for the reaction mixture. HPLC method was then developed for the identification and determination of derivatized methylglyoxal. Column Inert Sustain C-18 (4.6 mm× 250 mm i.d) with mobile phase acetonitrile: water: methanol (30: 68: 2 v/v/v) with the flow rate of 0.9 ml/min at 320nm wavelength were used for analysis. Developed method was validation as per ICH Q2R1 guidelines. Linearity of derivatized MGO was found in the range of 160–960 g/mL with R^2 value 0.9977. LOD and LQD were found to be 1.3440 g/mL and 4.0736 g/mL, respectively. The developed method was found to be accurate and precise. The method was also found to be robust when small and deliberate changes were made in mobile phase ratio and flow rate. The method was used to analyze MGO in optimized syrup formulation.

Keywords: *HPLC, Methylglyoxal, Chemical derivatization, validation, syrup formulation*

PT/ST2/0047

A REVIEW ON MOLECULAR DOCKING

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Molecular docking is bioinformatic modeling that involves the interaction of two or more molecules to give a stable adduct. It makes predictions about the three-dimensional structure of any complex based on the binding characteristics of the ligand and target. Different potential adduct structures are generated by molecular docking and are ranked and categorized using the software's scoring function. Based on the system's overall energy, docking simulations forecast an optimum docked conformer. Despite all feasible solutions, the difficulties with ligand chemistry, receptor flexibility, and scoring function persisted. The rapid development of structural informatics, genomics, and proteomics has greatly aided in the search for new drugs for the modern day. Over the previous two decades, extensive research has been conducted to examine different docking techniques and identify molecules' active sites. The 3D structure of the molecule was visualized using a variety of docking algorithms. Small molecule three-dimensional computer-generated structures are inserted into a target structure using the structure-based virtual screening (SBVS) method known as molecular docking in a variety of locations, conformations, and orientations. Protein-ligand docking is a novel idea with many potential uses.

Keywords: *Ligand, Receptor, Scoring function, Protein-ligand docking*

PT/ST2/0048

SYNTHESIS, SPECTRAL CHARACTERISATION AND SCREENING OF NOVEL THIAZOLIDINONE DERIVATIVES FOR THEIR ANTIOXIDANT AND ANTI-INFLAMMATORY ACTIVITY

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With an objective of synthesizing some novel and potent antioxidant and anti-inflammatory agents, here we have reported the synthesis of new series of thiazolidinone derivatives (8a-d). Purity of all synthesized compounds were confirmed on the basis of melting point and TLC study. The structure of all these synthesized compounds was confirmed by IR, NMR and mass spectral data. All the synthesized compounds were screened for antioxidant and anti-inflammatory activity using Free radical scavenging activity by DPPH assays method, ferric ion reduction method and Denaturation of protein assay by bovine serum albumin respectively. Among the synthesized compounds 8a and 8b have shown significant antioxidant activity as compared to the standard drug Ascorbic acid and compound 8d has shown good anti-inflammatory activity compared to the used as compared to the standard drug Ibuprofen. Further enhancement in the pharmacological activity can be brought about by slight modification in the ring substituents.

Keywords: *Thiazolidinone, antioxidant, anti-inflammatory, Dpph assay*

PT/ST2/0049

DEVELOPMENT AND VALIDATION OF NOVEL HPLC METHOD FOR THE ESTIMATION OF DASATINIB IN BULK AND PHARMACEUTICAL DOSAGE FORMS

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A simple, accurate, precise RP-HPLC method was developed and validated for the estimation of dasatinib in bulk and pharmaceutical dosage forms. A Agilent Zorbax SB-Aq (250 x 4.6mm, 5µ) C18 column was used as stationary phase with mobile phase consisting of methanol and 0.1% Tri-fluro-acetic acid in the ratio of 55:45 V/V. The flow rate was maintained at 1.0 mL/min and effluents were monitored at 324 nm. The retention time was 4.97 min. The linearity of the method was observed in the concentration range of 20-120 µg/mL with correlation coefficient of 0.9997. The method was validated for its accuracy, precision and system suitability, LOD and LOQ, Solution stability, Forced degradation. The results obtained in the study were within the limits of ICH guidelines [Q2 (R1)] and hence this method can be used for the estimation of Dasatinib in pharmaceutical dosage forms.

Keywords: *Dasatinib, methanol, tri-fluro-acetic acid, validation.*

PT/ST2/0050

DEVELOPMENT AND VALIDATION OF ANALYTICAL METHOD FOR THE ESTIMATION OF DRUGS METOCLOPRAMIDE HYDROCHLORIDE AND DEXAMETHASONE SODIUM PHOSPHATE BY FTIR

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The objective of this study is to develop simple, precise, authentic and cost-effective analytical method for the estimation of antiemetic drugs such as Metoclopramide hydrochloride and Dexamethasone Sodium phosphate according to ICH guidelines. This method is to develop an accurate and validated method for estimating plenty of samples in short period of time. FTIR spectrophotometric method was used for the determination of the drugs (BRUKER ATR, Alpha interferometer attached to OPUS software). This simple method obeys Beers Lamberts law over a concentration range of 6.5-10.5mg for Metoclopramide hydrochloride and 4.4-10.8mg for Dexamethasone Sodium. Metoclopramide shows a correlation coefficient of 0.998 and for Dexamethasone sodium phosphate it is 0.997. Analytical method development is the key element of pharmaceutical development program and it is the process of proving that the developed method can be used to detect the amount / concentration of API in various formulations. The official test methods that result from these processes are used to ensure the identity, purity, potency and performance of drug products. The developed method can be used for the estimation of metoclopramide hydrochloride and dexamethasone sodium.

Keywords

Metoclopramide hydrochloride, dexamethasone sodium phosphate, FTIR, Method development, validation, ICH guidelines.

PT/ST2/0051

DEVELOPMENT OF THIAZOLIDIN-4-ONE DERIVATIVES AS EGFR INHIBITORS TARGETING RESISTANCE IN NON-SMALL CELL LUNG CANCER (NSCLC)

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The Epidermal Growth Factor Receptor (EGFR) is a vital enzyme in the ErbB family of receptor tyrosine kinases, and its overexpression can result in complications, particularly in lung cancer, breast cancer, and glioblastoma. Activating mutations in the EGFR gene had a significant impact on Non-Small Cell Lung Cancer therapy techniques (NSCLC). Allosteric kinase inhibitors are a promising new therapy strategy that targets kinases with oncogenic driver mutations in cancers. Seven novel substituted thiazolidin-4-one derivatives were designed, optimized and synthesized as small molecule L858R/T790M/C797S mutant EGFR inhibitors targeting resistance in Non-Small Cell Lung Cancer (NSCLC). From synthesized compounds, compounds 6a and 6b resulted to be highly potent with IC50 values of 120 nM and 134 nM. Further, it was clear that compound 6a induced early apoptosis (30.68%) and late apoptosis (4.33%) in comparison with control (early apoptosis 1.37%, late apoptosis 1.22%). Molecular docking studies show that compounds in their conformational state have a high likelihood of interacting to the allosteric binding site of the T790M/C797S mutant (PDB ID: 5D41) EGFR enzyme. Molecular dynamic simulations and an insilico ADMET research were used to examine the potency of compound 6a.

Keywords: *EGFR; allosteric; thiazolidine-4-one; ADMET; molecular docking; molecular dynamic simulations*

PT/ST2/0052

UV SPECTROPHOTOMETRIC APPROACHES FOR DETERMINATION OF CARBIMAZOLE AND ITS RELATED IMPURITY, DEGRADATION PRODUCT AND METABOLITE: METHIMAZOLE

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The goal of the current research was to develop novel, simple, accurate, and precise UV spectrophotometric techniques with sensitivity par with complex chromatographic methods. Carbimazole (CMZ) an official drug in Indian pharmacopoeia (IP), British pharmacopoeia (BP)] and European pharmacopoeia (EP), lists Methimazole (MTM) as the only specified impurity with of 0.5 % allowable limit in drug substance. Literature reveals MTM also as a degradation product and a metabolite of CMZ. For the precise determination of the MTM (imp A) in the presence of the drug carbimazole, three methods viz., ratio subtraction with extended ratio subtraction (RSERM), ratio difference (RD), and ratio subtraction coupled with constant multiplication (RSCM) were developed. In RSERM and RSCM, by selecting the proper divisor concentration, ratio spectra of carbimazole and methimazole were obtained and absorbance was measured at 234 and 264 nm respectively. In the RD, without interference from the other component in the mixture, the ratio spectra's amplitude difference between two chosen wavelengths was recorded and used to estimate the ratio of methimazole and carbimazole at ($\Delta P_{216.52\ nm\ -260.93\ nm}$) and ($\Delta P_{229.95\ nm\ -260.59\ nm}$) respectively. All methods were validated as per ICH Q2 (R1) guideline and displayed linear response with good correlation coefficient and were found to be within acceptable range in terms of specificity, precision and accuracy. The developed methods were sensitive to detect methimazole (imp A) up to level of 0.5% as per official specification. Thus, for the determination of assay and related impurity in bulk drug and formulation, these methods can be used as an alternative to chromatographic approach.

Keywords: *Carbimazole, Methimazole, specified impurity, ICH Q2 (R1) guideline.*

PT/ST2/0053

QUINAZOLINONE DERIVATIVES AS PROMISING SCAFFOLDS: ANTI -BREAST CANCER AGENT

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According to World Health Organization 3 February 2022, the most commonly caused cancer in the worldwide is breast cancer. According to National Breast Cancer Coalition, the incidence of breast cancer is 1 in 8. The most dangerous type is Triple Negative Breast Cancer (TNBC). On research with much heterocyclic structure, the Quinazolinone derivatives are found to be potent anti-breast cancer agents and effective against TNBC MDA-MB-231 (M.D.Anderson-Metastatic Breast-231) cell line, Epidermal Growth Factor Receptor (EGFR), Vascular Endothelial Growth Factor Receptors (VEGFRs), Michigan Cancer Foundation-7(MCF-7) cell lines. Quinazolinone have strong lactam-lactim tautomeric interaction and the presence of methyl group in the 2nd position, there will be an increase in tautomeric effect. The structure activity relationship studies of Quinazoline ring system shows that the 2nd, 6th and 8th position are very much important. The substitution of phenyl ring at 8th position and nitro group at 6th position shows a potent anti-cancer activity and the presence of different heterocyclic moieties in 3rd position of the Quinazolinone ring produce increased chemotherapeutic activity. The Quinazolinone moiety is a promising scaffold for anticancer properties. This expose covers the published work on anti-breast cancer agents embedded in preceding research documents from current studies. The properties of new compounds will have an attractive anti-breast cancer property that can be safe.

Keywords: *Quinazolinone. Breast cancer, EGFR, Scaffold, anti-cancer, Position, tautomeric effect.*

PT/ST2/0054

DEVELOPMENT OF A STABILITY INDICATING UPLC METHOD FOR THE ESTIMATION OF IBRUTINIB AND ITS RELATED SUBSTANCES USING QUALITY BY DESIGN APPROACH

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A novel, sensitive, mass compatible and stability indicating UPLC was developed for the estimation of ibrutinib and its known impurities. Five different columns ACQUITY UPLC® BEH C8 column (2.1 mm X 50 mm, 1.7 µm), ACQUITY UPLC® BEH C18 column (2.1 mm X 50 mm, 1.7 µm), ACQUITY UPLC BEH Shield RP18 Column (2.1 mm X 50 mm, 1.7 µm), ACQUITY UPLC BEH HILIC Column (2.1 mm X 50 mm, 1.7 µm), ACQUITY UPLC BEH Phenyl Column (2.1 mm X 50 mm, 1.7 µm) were investigated. The detection was monitored at 258 nm using photodiode array detector. Acidic, neutral and alkaline mobile phase were used. Further the effect of flow rate and column temperature were assessed. The method was further optimized using quality by design approach. Forced degradation studies were also conducted to demonstrate the stability indicating power of the developed UPLC method. Ibrutinib pure drug and impurity spiked samples were exposed to different stress conditions. Finally, the method was validated according to ICH guidelines. Among all the columns, best chromatographic separation was achieved with a ACQUITY UPLC® BEH C18 column (2.1 mm X 50 mm, 1.7 µm) using 0.5 % formic acid in water-0.5% formic acid in acetonitrile (50:50 v/v) as mobile phase. Better resolution between the peaks was observed at the flow rate of 0.6 ml/min with a short run time of 5 min. The chromatographic parameters which are affecting drug retention time, resolution and run time were identified and analyzed using design of experiments. Statistical concepts with experimental design were used as an efficient and fast tool to simultaneously gain knowledge regarding the influencing factors and interactions. An operating space within the design space was established and a verification study confirmed the robustness of the final method. The method was found to be linear, accurate, specific, selective, precise and robust. Substantial degradation was observed in acid, base and peroxide degradation condition and was resistant to neutral, photolytic and thermal degradation. The proposed method provides a good resolution between Ibrutinib and all the impurities. The newly established method is suitable for the assay of ibrutinib and its process related impurities.

Keywords: *Ibrutinib, related substances, stability, degradation, mass compatible, screening, quality by Design*

PT/ST2/0055

MOLECULAR DOCKING ON COMBRETASTATIN A4 ANALOGUE

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To more properly design ligands, this study used a synergistic strategy based on structure and ligand. The current study emphasises the combination of structure and ligand-based approaches, such as molecular docking, energy-based pharmacophore, pharmacophore and atom-based 3D-QSAR modelling, in order to investigate COMBRETASTATIN A-4 analogues as anticancer drugs. The primary purpose of using a structural and ligand-based synergistic approach is to establish a relationship between a compound's structure and its biological action. The capacity of combretastatin analogue to damage blood vessels in tumor's has been shown to vary across cancer cell types. The tubulin -subunit's colchicine binding site is where combretastatin binds. Combretastatin, despite its name, is not a member of the statin drug family, which lowers cholesterol by attaching to the colchicine site on tubulin. Numerous combretastatin analogues were evaluated using the structure-based approach (molecular docking). To examine the drug binding affinities for anticancer effect, all of the structures were docked to the tubulin's colchicine binding site. The pharmacophore and atom-based 3D-QSAR modelling of the combretastatin (17 substances) analogues produced encouraging partial least squares statistical findings. By evaluating and contrasting the activity of database medications with actual activity, the developed shared pharmacophore hypothesis and 3D-QSAR models were externally validated.

Keywords: Combretastatin A-4, Molecular docking study, Tubulin

PT/ST2/0056

DETERMINATION OF CYCLOSPORINE IN FORMULATED LIQUID CRYSTALLINE NANOPARTICLES BY RP-HPLC, ITS METHOD DEVELOPMENT AND VALIDATION

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To develop a simple and quick reversed, high-performance liquid chromatographic technique for identifying cyclosporine utilizing UV detection. The mobile Phase included acetonitrile and ammonium acetate as a buffering media. In the ratio 90:10 (ACN: Ammonium Acetate, pH 4) using C_{18} Column with flow rate of 0.8ml/min, the eluent detected at 215nm with injection volume 20µl. The LOD & LOQ found to be 0.12µg/ml and 0.15µg/ml. According to the approach, the linearity was in the range of 1-64µg/ml. It has been claimed that cyclosporine recovery rates range from 98 to 100 percent. Because there was no invasion from excipients or mobile phase, the strategy was proven to be correct. Cyclosporine has a run time of around 10 min. The calibration curve was absolutely straight. Cyclosporine elution time was 4.56 minutes. The accuracy of the system was 98.2 percent, respectively, and the percent RSD was less than 2.0 percent. The determination of Cyclosporine was exact and precise based on the data obtained the system adaptability, accuracy, linearity, precision, specificity, and robustness of this approach were validated in accordance with the ICH recommendations. Because the system appropriateness requirements were fulfilled, it was determined that the established technique was suitable for testing.

Keywords: Cyclosporine Liquid Crystalline Nanoparticles, HPLC, Validation, Ammonium Acetate,

PT/ST2/0057

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF DISSOLUTION METHOD FOR DERACOXIB CHEWABLE TABLETS BY USING RP-HPLC

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Deracoxib chewable tablets are the class of drugs which belongs to Non-steroidal anti-inflammatory drugs. This is used for veterinary purpose for management of pain in post-operative recovery of dental surgery in dogs. The main mechanism of this Deracoxib is selective COX-2 inhibitor and effective pain reliever in dogs. An analytical method was developed, and validation was done of dissolution method for Deracoxib chewable tablets by using RP-HPLC. Preliminary assessment was done for dissolution was done like selecting dissolution media of 0.04M tri-sodium phosphate dodecahydrate with 1% SLS with volume of 900 ml in dissolution jars at temperature 37±0.5oC. The apparatus that are used in dissolution method is USP apparatus II i.e. paddle and the speed maintained is 75 rpm. There the complete dissolution of tablets was done. The time point was 30 min. For validating the dissolution method through HPLC mobile phase was prepared. For preparing the mobile phase, buffer is needed which was done with trifluoracetic acid. The mobile phase is the mixture of buffer and acetonitrile in the ratio 45:55(v/v). The chromatographic conditions in HPLC were Zorbax SB C-18, 150 X 4.6mm 5µ or equivalent is used as a column with flow rate 1.0 ml / minute at 25oC. Detection was done at 254nm using Photo Diode Array detector (PDA). The retention time of different strengths of Deracoxib i.e. for 12mg is 0.02 and for 100mg strength was found to be 0.04. This present work determines there are no known impurities in Deracoxib chewable tablets which cause adverse effects and determines the betterdrug release after administration.

Key words: *Deracoxib, RP-HPLC, Trifluoracetic acid, Acetonitrile, PDA detector.*

PT/ST2/0059

COMPUTATIONAL METHODS FOR *IN-SILICO* DESIGN OF QUINAZOLIN-4-ONE DERIVATIVES AGAINST ENOYL ACYL CARRIER PROTEIN REDUCTASE (INHA) OF TUBERCULOSIS

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A structure-based computerized simulation of ligand-receptor associations were used in this revise. The purpose of this research is to locate potentially bioactive molecules as enoyl acyl carrier protein (ACP) Reductase (InhA) antagonists using an *In silico* drug design approach. InhA belongs to the NADH-dependent enoyl-ACP (CoA) reductase enzyme family. InhA elongates acyl fatty acids, which are progenitors of mycolic acids and mycobacterial cell wall components. Quinazolin-4-one have been used to therapy a lot of afflictions of human renowned works exemplify that it possesses various biological activities. Assortment literature quinazolinone derivatives exhibited antitubercular activity have been raising targets of some quinazolin-4-one as well as exhibits all most various biological activity with increased anti tubercular activity at 3rd position. This study suggested that the designed quinazolin-4-one derivatives systematically investigate binding affinity and drug likeness property beside the Enoyl ACP (InhA) .The interaction of newly designed compound libraries (QDT1-QDT8) with excellent binding affinity of against selected (PDB ID: 4TZK) Macromolecule with good ADMET Properties. Further might establish a reliable medication or support potential lead Identified and could be further taken for experimental studies.

Keywords: Quinazolin-4-one, anti-tubercular, InhA, Binding affinity, ADMET Study, 4TZK.

PT/ST2/0060

ANALYTICAL SCREENING OF NANOSUSPENSION OF QUERCETIN AND KAEMPFEROL

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Natural flavonoids like quercetin and kaempferol have been found to have a range of biological and pharmacological effects, including dilation of coronary arteries, the reduction of blood cholesterol, anti-inflammatory, anti-oxidant, and anti-tumor properties. Poorly soluble medication formulation has been effectively addressed by the application of nanosuspension technology. A carrier-free colloid drug delivery method called nanosuspension only contains minimum of stabilisers as well as pure drug particles with mean particle sizes in the nanometer range, generally between 10- 1000nm. According to the variations in the production principle, the nanosuspension techniques are categorised as bottom up processes and top down processes. Antisolvent evaporation was for preparation of quercetin and kaempferol nanosuspension and evaluated for particle size and Zeta potential using Zetasizer. Differential scanning calorimeter and TEM measurements produced varied findings, which was shown. The profile dry powder revealed the phase shift from crystalline to amorphous. On the other hand, the drug's original crystalline form was preserved throughout the HPH process. According to the findings of the dissolving tests, the antisolvent evaporative procedure improved the drug's solubility and dissolution rate more than other methods. When it came to final particle size, high performance liquid chromatography and transmission electron microscopy study demonstrated that both nanosuspensions out performed solution formulation for the reasons of chemical and photo-stability. In light of this, it can be said that antisolvent evaporation methods were effective in creating a chemically stable quercetin and kaempferol nanosuspension with a much higher dissolving rate.

Keywords: *Quercetin, Kaempferol, nanosuspension, TEM, Zeta Potential*

PT/ST2/0062

DRUG DEVELOPMENTFOR ALZHEIMER'S DISEASE, MOLECULAR SCREENING AND DOCKING.

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Alzheimer's is the most common cause of dementia, a general term for memory loss and other cognitive abilities serious enough to interfere with daily life. Alzheimer's disease accounts for 60-80% of dementia cases. Alzheimer's is the sixth-leading cause of death in the United States. On average, a person with Alzheimer's lives 4 to 8 years after diagnosis but can live as long as 20 years, depending on other factors.

No disease-modifying drugs are available for Alzheimer's disease, but some options may reduce the symptoms and help improve quality of life. Drugs called cholinesterase inhibitors can ease cognitive symptoms etc.

The aim of our research is to work on new targets involved in the pathological changes of AD and find out effective compounds which can limit the disease progression. The study pattern is based on computer aided drug design and molecular docking. Various softwares have been used to develop the 3D visuals and to study the detailed information about the target molecule. Some of the naturally occurring compounds isolated from various plants were docked successfully for the respective target molecule. ADME pattern was determined and scoring for each ligand was obtained.

Keywords: *Alzheimer's disease, molecular docking, natural ligands, 3D visuals, drug design*

PT/ST2/0063

A COMPREHENSIVE REVIEW ON CHEMOMETRICS IN PHARMACEUTICAL ANALYSIS

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Chemometrics is the science where chemistry and pharmaceuticals meet statistics and software. Depending on the problem raised, the regression multivariate methods are applied to the data which is to be analysed. In this review the attention is mainly focused on the Chemometrics and Experimental Design. Statistical modelling and experimental design are become more essential tools for the development and understanding the complicated products and process. Multivariate data analysis is also focused in this paper along with the applications of Chemometrics in pharmaceutical analysis.

Keywords: *Chemometrics, Partial Least Square(PLS), Classical Least Square (CLS), Design of Experiments (DOE), Full Factorial Design, Inverse Least Square(ILS).*

PT/ST2/0064

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR ESTIMATION OF NEVIRAPINE BY LC-MS/MS IN HUMAN PLASMA

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A simple, sensitive, accurate and fast High Performance Liquid Chromatography - mass spectrometric (LCMS/MS) method was developed and validated for Nevirapine in human plasma. Nevirapine and Metaxalone used as an internal standard (IS) were extracted from human plasma via Liquid - liquid Extraction. Human plasma along with standard were directly analyzed using LC/MS/MS-method. An isocratic mode is used to separate interference peaks using a Hypersil BDS C_{18}, (100 X 4.6 mm, 5µ), column. The mobile phase composition was 0.2% formic acid: acetonitrile in the ratio of 30:70 (V/V). The m/z of Nevirapine and IS were 267.10 /226.00 and 222.00/161.10, respectively. Linearity ranges were 0.0222 to 6.2478 µg/mL. Calibration functions, limit of quantitation (LOQ), limit of detection (LOD), stability, intra- and inter-day reproducibility, accuracy, and recovery are estimated as per ICH guidelines. This method is proved to be free from matrix effects.

PT/ST2/0066

SIMULTANEOUS ESTIMATION OF METFORMIN HCL AND VILDAGLIPTIN BY RP-HPLC METHOD IN BULK AND PHARMACEUTICAL DOSAGE FORM

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Analytical methods development of Metformin HCL and Vildagliptin plays important role in discovery, development, and manufacture of pharmaceuticals. The profile of drug METFORMIN HCL and it is used to decreases blood glucose level. Comes under type diabetes. In this project another drug is used ***VILDAGLIPTIN*** it is an inhibits dipeptidyl peptidase-4, it is also used to treat type 2 diabetes. The aim of the objective is "To develop a HPLC method for simultaneous determination of metformin HCL and Vildagliptin in bulk and pharmaceutical dosage form". The objective of the is project is To validate the developed HPLC method with Detector for metformin HCL and Vildagliptin in bulk and tablet to be employed in routine and stability test. The developed method will be validated according to ICH guidelines for its various parameters.

In this project 4 trials were used with different column and keeping constant of mixture of methanol and water. In trial 1 ***Mobile Phase***: Stationary Phase = Methanol: Water, ***Column***: ZORBAX C18. ***Trial 2: Mobile Phase***: Stationary Phase = Methanol: Water, ***Column***: HypersilC18. ***Trial 3:Mobile Phase***: Stationary Phase = Methanol: Water, ***Column***: HypersilC18, and in ***Trial 4: Mobile Phase:*** Stationary Phase = Methanol: Water, ***Column***: HypersilC18.

In first trial Second Peak was not eluted. In 2nd trial Peak splitted, less resolution between two peeks, in 3rd Show less resolution between two peaks trial 4th Two Peak well separated.

In trail 4 peaks are well separated and vildagliptin showed more wavelength compared to metformin. From this comparison study, it is concluded that two drug shows good reproducibility and recovery in HPLC method They also showed good accuracy and precision without any prior separation in HPLC method.

Key words: Metformin Hcl, vildagliptin, Rp-Hplc Method In Bulk And Dosage Form

PT/ST2/0068

IN SILICO ELUCIDATION OF PYRIMIDINE AND QUINAZOLINE MOLECULES AS EGFR INHIBITORS.

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The present study was devised in an attempt to discover novel pyrimidine and quinazoline derivative against NSCLC by inhibiting the important amino acid present on Epidermal Growth Factor Receptor Tyrosine Kinase 1. Among the multiple targets, EGFR-TK-1 is most important target for anti-cancer treatment. The development of inhibitors targeting directly, EGFR-TK1 of non-mutated and mutated strains, along with the pharmacokinetic profile of having better membrane penetration property is a novel perception. Multiple web resources were used to identify targets, including UniProt, String database, Stitch, DisGeNet, PDB, etc. Multiple sequence alignment, or BLAST, was used to filter the multiple PDBs after identification. The target was validated using a Ramachandran plot. The target's active site was examined to determine the nature of the binding pocket. The compounds were designed based on a literature review, then sketched and optimized using MM2. Hit identification was accomplished using molecular docking, while docking validation was accomplished through RMSD computation. During target studies, the essential amino acids tyrosine and lysine were identified. The designed compounds were docked on these amino acids using Biovia Discovery Studio, and the ligand-target interaction was evaluated using the C-DOCKER scoring algorithm. The validation of molecular docking received a score of less than 1Å. Lipinski's rule, TPSA, ADME, and other physicochemical characteristics of lead were also tested. The *in silico* study revealed that the designed compounds exhibited interaction with essential amino acids involved in the EGFR_TK1 pathway for NSCLC prevention.

Key words: *NSCLC, EGFR_TK1, Hit identification, Pyrimidine, Anti-cancer, Quinazoline, EGFR Inhibitors, In silico.*

PT/ST2/0069

"*IN-VITRO DRUG-DRUG* INTERACTION STUDY OF COVID-19 DRUG WITH ANTI-DIABETIC DRUGS."

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Aim of the study was to be establish the Analytical method development and to study the *in-vitro* drug interaction of favipiravir with metformin and glipizide. The study of method development of FAV, MET and GLIPI initially we have used different mobile phase combination with different ratios. Eventually, it was found that the mobile phase consisting of 50 mM potassium dihydrogen ortho phosphate (pH: 2.8 with ortho-phosphoric acid) and methanol (60:40, v/v) at a flow rate of 0.6 $mLmin^{-1}$. In *In-vitro* drug interaction of FAV with MET and GLIPI was studied using Microsomes From liver, Pooled from Male rat and evaluated using UFLC.
The proposed UFLC method is proven to be suitable as well as found to be simple, precise and economical, and has been routinely adopted for *drug* interaction study. In *in-vitro* study, favipiravir alone was showed a high metabolism but when co-administered with glipizide and metformin, favipiravir inhibits its own metabolism as well as the metabolism of glipizide and metformin. Based on result We conclude that the developed method was precise and favipiravir acts as an enzyme inhibitor. Favipiravir strongly inhibited CYP2C8-mediated glipizide metabolism. Thus, from safety point of view metformin is better to prescribe as a coadministration therapy with favipiravir. Also, *in-vitro* study will be helpful for *in-vivo* in future days.

***Keywords*:** Favipiravir, Metformin, Glipizide, Method Development & Validation, *Drug-Drug* interaction, *In-vitro* study.

PT/ST2/0070

PHARMACOPHORE BASED VIRTUAL SCREENING TOWARD THE DISCOVERY OF NOVEL BLK (B-LYMPHOCYTE KINASE), TYROSINE KINASE INHIBITORS

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BLK (B-lymphocyte kinase) is a protein from the family SRC (Proto-oncogene tyrosine-protein kinase), an important cell signaling molecule that influences cellular response. The BLK tyrosine-protein kinase has been a potential target for cancer therapy. As a result, this could be an initial step towards the development of novel inhibitors to fight cancer. A homology model of human BLK tyrosine kinase was constructed using Phyre2. Active site prediction was done for the model using the CASTp server. HighThrough put virtual screening was performed with the help of a ligand-based pharmacophore model of FDA (Food and Drug Administration) approved SRC tyrosine family kinase inhibitors using the Pharmagist and ZINC Pharmer servers. The 250 novel compounds obtained were docked by a Python script-based method with Autodock Vina. To ensure drug safety, ADME/Tox (Absorption, Distribution, Metabolism, Elimination and Toxicity) analysis was performed for the molecules with the lowest binding energy. Six compounds that passed ADME/Tox analysis were again utilized to perform molecular docking with Autodock4. The active residues were then identified using PLIP [protein ligand interaction profiler]. And based on the molecular docking analysis, the compound ZINC57306994 was found to show increased binding affinity with the target BLK tyrosine kinase. The compound ZINC57306994 may serve as a lead molecule that could be developed into a potent BLK tyrosine kinase inhibitor.

Key Words: *Pharmacophore modeling, Molecular docking, BLK tyrosine kinase, Cancer.*

PT/ST2/0071

METHOD DEVELOPMENT, VALIDATION STUDY AND DEGREDATION PROFILING OF REPAGLINIDE AND METFORM IN COMBINED DOSAGE FORM

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A simple, quick, efficient, and reproducible method for determining metformin HCl and repaglinide in combination dosage form has been developed and validated. The estimation was performed using a C18 waters column with an id (250×4.6, 5 µm) length, a mobile phase of methanol and 0.05 percent OPA in a ratio of (81:19), a pH-3 flow rate of 0.8 ml/min, and an ultraviolet detection wavelength of 238 nm. The run times for these two drugs, metformin and repaglinide, were 2 minutes and 4 minutes, respectively. The method was validated as a final verification of the development of the procedure with respect to precision, linearity, accuracy, ruggedness, and robustness. The validated method was successfully used on the pharmaceutical dosage form that is available commercially, producing very good and reproducible results.

Key words: Metformin, Repaglinide, RP- HPLC,

PT/ST2/0072

QBD APPROCH BASED DEVELOPMENT OF VALIDATED ANALYTICAL METHOD FOR ESTIMATION OF CLARITHROMYCIN BY RP-HPLC

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Based on QbD, a chromatographic technique for estimation of clarithromycin from bulk was developed and validated. The method for analysis of clarithromycin is obtained by QBD trial optimization. The optimized batch was carried out by HPLC gradient system with auto-injector using UV (DAD) detector which had C18 quaternary gradient column at room temperature. The mobile phase was ACN: Water (09:91) with a flow rate of 0.9 ml/min. The sample was detected at a wavelength 209nm and the sample size was 20µl. According to ICH guidelines, the purpose of method validation is to demonstrate the acceptability of an analytical technique for its intended purpose. The validated parameter includes the recovery study found (% RCVD - 100), Linearity regression (0.999) which obtained a parallel calibration curve, repeatability (RSD%-0.26) and LOD & LOQ were found at 9.206µg/ml & 27.898 µg/ml respectively. Acid, base, H2O2, and neutral were used in the stress degradation investigation. The degradation with acid (5.08%), base (96%), H2O2 (32.14%), and neutral (3.42%) were found. The developed approach is used to analyze clarithromycin in pharmaceutical formulations and is unique and accurate.

KEYWORDS: RP-HPLC, QBD, Clarithromycin.

PT/ST2/0074

INSILICO DESIGN ,SYTHESIS AND BIOLOGICAL EVALUATION OF 2,3 DIHYDROXY QUINOXALINE

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dihydroxyquinoxaline molecule and its derivatives has become an important moiety for the development of novel drugs. A series of 2, 3- dihydroxyquinoxaline derivatives were synthesised, using different methods and the structure was confirmed by IR spectroscopy, NMR spectroscopy and MASS spectrometry. Derivatives were then evaluated for their anticancer, anti-inflammatory and antioxidant activity. 2, 3-dihydroxyquinoxaline was synthesized by the cyclization reaction of orthophenylenediamine and oxalic acid in the presence of ethanol. Further the products were treated with several reagents to form derivatives. The derivatives were evaluated for their in-vitro anticancer, anti-inflammatory and antioxidant activities. In this, OXD1, OXD4, OXD5 showed good anticancer activity, all compounds showed good anti-inflammatory activity, andOXD1, ODX4, OXD5 showed good and OXD2 and OXD3 showed moderate antioxidant activity. The results show that the synthesized 2, 3-dihydroxyquinoxaline derivatives are an interesting lead molecule for further synthetic and biological evaluation. These compounds certainly hold great promise towards the pursuit to discover novel class of anticancer, anti-inflammatory and antioxidant agents.

Key words: 2, 3-dihydroxyquinoxaline; spectroscopy; anticancer; anti-inflammatory; antioxidant; orthophenylenediamine

PT/ST2/0076

DISCOVERY OF POTENTIAL INHIBITORS AGAINST EGFR-TK'S & CDK'S RECEPTOR OF ANTI-CANCER LEAD MOLECULES FROM QUINAZOLINONE: *IN-SILICO* DESIGN – COMPUTATIONAL APPROACH.

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Cancer is one of the demoralizing also the majority widespread grave diseases in place of most important wellbeing calamity within equally residential as well as budding countries for the instance more than a few decades. According to Journalism, Says to facilitate quinazolinone based molecules were originate to hinder the epidermal growth factor receptor (EGFR) and tyrosine kinases. EGFR-TK'S acting imperative part in cell expansion, regulation with one of the most significant deliberation studied targets of tyrosine kinases (TK) inhibitors[34]. CDK2 could have a key role in the G2 phase of the cell cycle. The significance of cycline-dependent kinase2 (CDK2) for cell cycle progression treatment in opposite to cancer also additional hyper-proliferative disorders[35]In order to categorize the potential aspirant for managing Cancer, molecular docking done as well executed newly designed molecules from the derivatives of quinazolin-4-one on the binding pocket of enzyme EGFR TK's and CDK's (PDB ID:1M17,2KW6)enzyme and reference compounds were used 5-fluoro Uracil and gefitinib towards explore the binding score as well as computational approaches on selected quinazolinone derivatives of designed (QDC1-QDC10) libraries to show the relationship of the structural parameters drug like properties which results in the prediction of pharmacokinetic & bioactivity properties, to make available and design of new target Analogue as Anticancer agents for further study.

Keywords: *EGFR-TK'S, CDK2, Anticancer, lead molecules, Active site, Binding score, Inhibitors.*

PT/ST2/0077

DESIGN, SYNTHESIS AND PHARMACOLOGICAL EVALUATION OF BENZIMIDAZOLE- METHYLAMINE BRIDGED PHENYL-1,3,4-THIADIAZOLAMINE DERIVATIVES

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Design, Synthesis and Pharmacological evaluation of Benzimidazole-Methylamine Bridged Phenyl-1,3,4-Thiadiazolamine Derivatives is based on the existing compounds having benzimidazole as a basic nucleus, because of advancement in the field of medicinal chemistry, several modifications are possible by molecular modelling. Benzimidazole derivatives are design with molecular docking studies gives an insight view of potent molecule interacting in a putative binding site. The ligands are studied for binding affinity of protein 3NT1 which is COX-2 inhibitors (Oxidoreductase/ Oxidoreductase inhibitor). The ligand 2C possess high affinity towards the active binding site and it shows good docking score against the protein 3NT1.

In this scheme, a series of Phenyl-1,3,4-Thiadiazolamine containing Benzimidazole moieties were designed and well scored compounds in docking get synthesized. Benzimidazole-Methylamine Bridged Phenyl-1,3,4-Thiadiazolamine derivatives are synthesized in three steps. In step 1, Synthesis of 2-(Chloromethyl)-1H-Benzimidazole from O-phenylenediamine was carried out. Step 2 involves the preparation of substituted 5-phenyl-1,3,4-thiadiazol-2-amine from substituted aromatic aldehyde and thiosemicarbazide. Step 3 involves the preparation of Substituted N-[(1H-benzimidazol-2-yl) methyl]-5-phenyl-1,3,4-thiadiazol-2 amine from 2-chloromethyl benzimidazole and substituted 5-phenyl-1,3,4-thiadiazol-2-amine. The synthesized compounds were characterized and confirm by TLC, UV, FT-IR, 1H-NMR and Mass spectrometry.

Synthesized compound 2C, which is having high energy value and docking score is selected for anti-inflammatory activity at three different doses. The test drug 2C at the dose of 100, 200, 400 mg/kg b.w p.o showed significant reduction in paw edema ($P<0.001$) after carrageenan administration. It was observed that 2C at the dose of 400 mg/kg b.w p.o produced 39.5% inhibition of paw edema at the 3rd hr of the drug administration, whereas, 45.5% was produced by Indomethacin.

PT/ST2/0079

COLORIMETRIC ESTIMATION OF LINAGLIPTIN USING NINHYDRIN AS CHROMOGENIC REAGENT

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For the measurement of linagliptin in both its pure form and pharmaceutical formulations, a simple, specific, accurate, precise, sensitive, and affordable spectrophotometric approach has been created and validated. A method for calculating the absorbance of a purple-colored chromogen complex at 585 nm that is created by the interaction of linagliptin's primary amine with ninhydrin in the presence of sodium hydroxide is established. The method executed linearity in the concentration range of 1-10 µg/mL with good correlation coefficient of 0.999 were monitored between absorbance and corresponding concentrations of linagliptin. The limit of detection and limit of quantification values were determined for method and it found to be sensitive. The contemplated method was validated statistically as per International Conference of Harmonization guidelines. By carrying out recovery tests using the conventional addition approach, the method's dependability is further confirmed. The test process was not found to be significantly impacted by the excipients frequently employed as pharmacological aids. Precision and accuracy results showed % RSD values less than 2, indicates the repeatability and reproducibility of the proposed method. The assay results were in good agreement with each label's claim, indicating that formulation excipients had no effect on the assay's ability to estimate linagliptin. The validation findings demonstrated the suggested method's scientific validity. The approach that was being considered was accurate, focused, and useful for regular analyses of linagliptin in pharmaceutical dosage forms.

Keywords: Linagliptin, Ninhydrin, validation, assay.

PT/ST2/0080

DEVELOPMENT OF VALIDATED STABILITY INDICATING RP-HPLC ASSAY FOR ANAGLIPTIN

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Drug stability refers to the extent to which a drug Substance or product retains, the same properties within specified limit and characteristics that it possessed at the time of its manufacturing. The impurities formed under stress degradation studies or under storage conditions are the source responsible for toxicity or side effects. Thus, the structural characterizations, activity and toxicity evaluation of drug products may give strong support to reduce the side effects and it also prevents recall the formulation or dosage form from the market. The present study experimentally investigated the development of validated stability indicating RP-HPLC assay for anagliptin. It illustrates the development of stability indicating method under the conditions prescribed by ICH guideline and to separate said drug from its degradation products and estimate drug in presence of impurities which has been generated under stress conditions by RP-HPLC and further validate the developed method. The stability study was performed by exposing the drug at various stress conditions. It shows degradation up to certain extend. Hence developed RP-HPLC method said to be stability indicating method and can be employed for the routine quality control analysis of Anagliptin in laboratory mixture.

Keywords:- Anagliptin, RP-HPLC.

PT/ST2/0081

IN SILICO EVALUATION OF SOME NATURAL FLAVONES AS ANTICANCER COMPOUNDS

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Molecular Docking has been introduced as a computer method for the identification of the potential protein target of a drug. Docking is frequently used to predict the binding orientation of small molecules. Docking plays a major important role in rational drug design. A protein structure database is searched to find proteins to which a drug can bind. In this study, some flavones are selected [chyrsin, nobiletin, wogonin], target [4fm9], and standard drug [Doxorubicin], and the docking studies are performed by using autodock4.2.6.1. Autodock4.2.6.1 is an automated procedure for predicting the interaction of ligands with biomacromolecular targets and autodock combines to achieve rapid grid base energy. In this study docking energy of flavone [nobiletin] showed binding energy -8.63k.cal/mole with 6 aminoacid interactions compared to standard drugs and other flavone compounds. However, the functional groups are responsible for the binding behavior. The most active compound attached more tightly to the active site of the receptor, which resulted in higher binding affinities than other compounds. From the Docking study, various compounds that exhibited binding interactions are known and further these results are useful for further studies and future molecular modifications.

Keywords: Docking, Insilico, Evaluation, Flavones, anticancer compound, Binding energy.

PT/ST2/0082

A COMPUTATIONAL ASSESSMENT OF HOST DEFENCES BY EXAMINING THE EFFECT OF ANTI-HERPESVIRAL DRUG IMPURITIES OR ASSOCIATED COMPOUNDS ON THE VIRAL THYMIDINE KINASE RECEPTORS' BINDING SITES

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Famciclovir is a prodrug of the antiviral nucleoside analogue penciclovir. It is currently approved worldwide for the treatment of herpes simplex virus (HSV-1 and HSV-2) infections. The different classes of drugs have unique mechanisms of action to cease the virus, but we are concentrating on the HSV thymidine kinase (TK) that promotes the phosphorylation of drugs and is currently the most widely used suicide agent for gene therapy of cancer. The drugs have several impurities that can be genotoxic, and few are reported in the monographs. This study proposes the affinity of the impurities for the active site of TK through molecular docking to a receptor (PDB Id: 4MYV). The impurities' reliability was ensured through the in-silico preliminary drug designing model by screening their Lipinski rule of five violations, if any, ADMET prediction for their profile using online tools. We have done molecular docking of 22 famciclovir impurities along with famciclovir drug with the MOE 2009.10 computational software for their binding affinities. FC20 (CAS: 1797985-90-0) and FC21 (CAS: 23169-37-1) showed maximum and minimum scores of-26.95 and -7.21, respectively. The impurities were interfering with the active binding site, which could result in an adverse drug reaction or reduce the effect of active pharmaceutical ingredients (API). This research will provide an important idea for testing impurities and their genotoxicity. Considering that there might be a genotoxicity effect due to competition between API and the impurities, the outcome of the study can be used for the design and development of novel compounds having genotoxicity.

Keywords:*Herpes Simplex Virus, Thymidine kinase, Famciclovir, Molecular-docking, Impurities, 4MYV, toxicity.*

PT/ST2/0083

SIMPLIFIED, ONE-POT, THREE-COMPONENT SYNTHESIS OF NOVEL THIAZOL-4(5H)-ONE DERIVATIVE AS A HOST-DIRECTED THERAPY AGAINST TUBERCULOSIS

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Alternative approaches are being explored to address the increasing need for new and potent therapeutic options against *Mycobacterium tuberculosis* (MTB) and to reduce the duration of MTB treatment. Host-directed therapy is one such approach that aims at reducing inflammation, modulating autophagy, potentiating the immune response, or creating an unfavourable environment for the pathogen. Considering the above facts, the present research work is aimed at synthesizing the series of thiazol-4 (5H)-one moiety as the target candidates for the enzymes viz., COX-2, which plays a vital role in inflammation, and InhA, which plays a vital role in the MTB fatty acid (mycolic acid) biosynthesis pathway. The synthesized compounds were structurally elucidated by IR, ^{1}HNMR, and mass spectroscopy followed by *in-vitro* evaluation of antibacterial and anti-inflammatory activities. The compounds were ensured their reliability through the *in-silico* drug designing model and were subjected to a preliminary study by screening their violation of the Lipinski rule of five, if any, predicted for their ADMET profile study by using online available tools. The results obtained from these tools show there are no Lipinski rule violations and they produce significant anti-inflammatory and antibacterial activities. The results of computational study on the COX-2 (PDB Id: 3LN1) and InhA (PDB Id: 2NSD) showed that the compounds [code: Th (1–8)] had a well binding affinity of between -18.3 and -27.1 kcal/mol and, thus, might serve as the best lead for treating the MTB through modulating host cell mechanics. Host-directed therapies against tuberculosis, thus, offer an exciting opportunity for developing newer and better treatment regimens against this age-old disease.

Keywords: *Mycobacterium tuberculosis, Thiazole derivatives, In-silico study, Anti-inflammatory, Antibacterial*

PT/ST2/0084

SYNTHESIS, *IN-VITRO* EVALUATION, AND COMPUTATIONAL FACILITATED STUDY OF (Z)-1,2-DIPHENYL-2-(5-PHENYL-1,3,4-THIADIAZOL-2-YLIMINO) ETHENONE DERIVATIVES AS ANTI-CANCER AGENTS

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Cancer is recognized as one of the major public health threats around the world, and it is considered the second leading cause of death after cardiac disease. Human malignancy is related to chronic inflammation and viral and bacterial infection. By taking this hypothesis, we have synthesized a series of thiadiazole annulated benzil conjugates via the cyclization process and evaluated them for *in-vitro* antibacterial and anti-inflammatory activity. The compounds were structurally elucidated by IR, ^{1}HNMR, and mass spectral techniques. The synthesized compounds viz., TZ1, TZ2, TZ3, and TZ4 showed significant antibacterial activity against both gram-positive (*B. subtilis* and *S. aureus*) and gram-negative pathogens (*P. fluorescens* and *P. aeruginosa*) with a maximum zone of inhibition of 12-14 mm and 19-25 mm for 500 and 1000 µg/ml concentrations, respectively, when compared to standard drug ciprofloxacin at 250 µg/ml (15-18 mm and 25-28 mm). Whereas the results of an anti-inflammatory study showed the compounds at a concentration of 100-400 µg/ml produced a noteworthy inhibition on protein denaturation (73.28-84.33%) at 400 µg/ml when compared to standard 77.34%. However, the antiproteinase activity was in the range of 84.55–90.44 % when compared to the standard, 95.95 %. Further, to explore the molecular mechanics, an in-silico docking study against cancer facilitating enzymes, i.e., Kinesin-like protein KIF11 (PDB Id: 6G6Y) was performed, which showed that the compound TZ (1-4) had a binding affinity of between -18.3 to -22.1 kcal/mol. Therefore, it could lead to the creation of new drug candidates that could be used to treat a wide range of infectious diseases, such as inflammation, cancer, etc.

Keywords: *Cancer, Thiadiazole derivatives, Docking study, Anti-inflammatory, Antimicrobial*

PT/ST2/0087
PAID

UTILISATION OF AN "MATERIAL SAFETY DATA SHEET' (MSDS'S) FOR A FIRST HAZARD ANALYSIS WHILE USING AND STORING CHEMICALS.

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The material safety data sheet (MSDS), formerly known as the safety data sheet (SDS) in the United States, offers crucial information for the secure handling of chemicals. This article will discuss how safety data sheets are used for process design and safe dealing with chemicals. The hazard communication standard was modified by the US Department of Occupational Safety and Health Administration (OSHA).The standard has been specifically synchronized with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) of the United Nations (GHS). The use of standardized signal words, pictograms, hazard declarations, and preventive remarks are among the modifications.

Keywords: *Material Safety Data Sheet (MSDS), OSHA, GHS, Chemical hazards.*

PT/ST2/0088

DEVELOPMENT AND VALIDATION OF UV-SPECTROSCOPY METHODS FOR LOSARTAN

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An attempt was made to develop simple and economical methods for the estimation of Losartan by UV method. In absorption, 233 nm were selected wave length respectively. The statistical analysis of data obtained for the calibration curve of Losartan in pure solutions indicated a high level of precision for the proposed method, as evident by low relative standard deviation. The correlation coefficient was found to be significant. The linearity range showed straight line passing through origin. The method was validated by accuracy, precision and a low value of % RSD results of recovery studies also proves the accuracy of method. The linearity of Losartan was obtained at 2-10µg/ml respectively.

A spectroscopic method for quantifying Losartan in pure and tablet has been developed and validated individually. The developed method is selective, precise, accurate and linear over the concentration range studied. The method is simple and suitable for the determination of Losartan in formulation, without interference from excipients or from common degradation product, suggesting its application in IPQC and pharmacokinetic studies.

Keywords: *Losartan; uv- spectroscopy*

PT/ST2/0089

DRUG DESIGN, MOLECULAR DOCKING, ADME ANALYSIS IN SILICO STUDY FOR NOVEL NON-RECEPTOR THYROSINE KINASE WITH FDA APPROVED INHIBITORS

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A **Non-receptor tyrosine kinase** (**nRTK**) is cytosolic enzyme that is responsible for catalyzing the transfer of a phosphate group from a nucleoside triphosphate donor, such as ATP to tyrosine residues in proteins and enzymes that can transfer the phosphate group from ATP to a tyrosine residue of a protein (phosphorylation). The protein without A 3D structure of tnk1 (ACK family), homology modeling was done to the same protein by using Swiss model web server of 3EQR template, further the docking was done to the same protein with FDA inhibitors which belongs to the ACK and BTK family. For the confirmation the superimposition was done to the docked inhibitors of ack protein (tnk1) with ACK inhibitor and btk protein (6j6m) with btk inhibitor through which their identity is similar. Further pharmacophore was performed which as 2 different steps, firstly through pharmagist web server 3 FDA inhibitors were selected form ACK family, Thus obtained results were uploaded in zincpharmer web server to check the quarry results [841hits]. And the selected zinc drugs id's are zinc_72375253, zinc_72353110, zinc_72375336.which passes the ADME and then the docking was to the tnk1 protein.

Key Words: *Non Receptor Thyrosine Kinase, Tnk1 Protien, Pharmacophore, Zinc Pharmer, Pharmagist, insilico*

PT/ST2/0090

A GREEN CHEMICAL APPROACH FOR THE SYNTHESIS OF SUBSTITUTED HYDRAZONES

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Green chemistry is the utilization of a set of principles that reduces or eliminates the use or generation of hazardous substances. Few principles of green chemistry are Prevention, atom economy, Less Hazardous chemical synthesis, Designing Safer chemicals, Safer solvents and auxiliaries, Use of renewable feed stocks etc. AS the experiment continues the substituted phenyl hydrazones are synthesized by reacting phenyl hydrazine with benzaldehydes like Anisaldehyde, 4-Nitro Benzaldehyde, 2-Chloro benzaldehyde in presence of catalyst. The green chemicals approach used i.e., Grindstone method.

In grindstone method the chemical reaction was completed in lesser duration of time and have fair amount of percentage yield. The obtained products were characterised by physical properties(R_f value, melting point, molecular weight).finally it can be concluded that grindstone method is a alternative technique having an increased yield and faster reaction rate.

Keywords: *Green chemistry, Grindstone method, phenylhydrazone.*

PT/ST2/0091

SYNTHESIS AND ANTIMICROBIAL STUDY OF THIADIAZOL-2-YL-BENZOPYRAN-2-ONE DERIVATIVES

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The present investigation involves the synthesis and antimicrobial (antibacterial and antifungal) activity of thiadiazol-2-yl-benzopyran-2-one derivatives. We have synthesised 12 title compounds. The key starting compound for synthesis of title compound is 7-amino-4-methyl-benzopyran-2-one. This was synthesised by reaction of m-amino phenol with ethyl chloroformate to give urethane, which on treatment with conc. Sulphuric acid and glacial acetic acid gives 7-amino-4-methyl-benzopyran-2-one.

The title compound (Iva-1) was synthesised by treating 7-amino-4-methyl-benzopyran-2-one with carbon disulphide in presence of iodine which gave 7-isothiocynate-4-methyl-benzopyran-2-one. Condensation of various acid hydrazides with 7-isothiocynate-4-methyl-benzopyran-2-one gave 7-hydrazine-carbothioamide-4-methyl-benzopyran-2-one, which on further cyclization with conc. H2SO4 afford the title compound. The structures of these compounds were confirmed by spectroscopic data.

All these newly synthesised compounds Iva-1 were screened for antimicrobial study. The antibacterial and antifungal activity was performed on the Nutrient Mueller Hinton Agar media and Potato dextrose agar media respectively. The zone of inhibition was measured in mm. The compounds IVa, IVc, and IVj show the good antibacterial activity. While compounds IVd, IVf, IVj and IV1 show the good antifungal activity. The MIC of these compounds was determined. In these componds Iva, and IVc are most active against gram-

PT/ST2/0092

SYNTHESIS AND ANTIMICROBIAL STUDY OF AZETIDINYL BENZOPYRAN-2-ONE DERIVATIVES

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The present investigation involves the synthesis and antimicrobial (antibacterial and antifungal) study of 1-(3-chloro-2-oxo-4-phenylazetidin-1-yl)-3-(4-methyl-2-oxo-2H-chromen-7-yl) urea derivative which are Azetidinone derivatives of Coumarin. We have synthesised 12 title compounds. The key starting compound for synthesis of title compound is 7-urethane-4methyl-benzopyran-2one. This was synthesised by reaction of m-amino phenol with ethyl chloroformate to give urethane, which on treatment with conc. Sulphuric acid and ethyl acetoacetate gives 7-urethane-4-methyl-benzopyran-2-one.

7-urethane-4-methyl-benzopyran-2-one was further condensed with hydrazine hydrate in ethanol to give N-(4-methyl-2-oxo-2*H*-chromen-7-yl) hydrazine carboxamide which is further exposed to various substituted aldehydes to give Schiff bases, which on further treatment with choro acetyl chloride and triethylamine afford the title compound Va-l. The structure of these compounds was confirmed by spectroscopic data. All these newly synthesised compounds Va-l were screened for microbial study. The antibacterial and antifungal activity was performed on the Nutrient Mueller Hinton Agar media and Potato dextrose agar media respectively. The zone of inhibition was measured in mm. The compounds Va, Vb, and Vc showed the good antibacterial activity. The compounds Va, Vb and Ve showed the good antifungal activity.

Keywords: *7-urethane-4-methyl-benzopyran-2-one, Coumarin, Azetidinone, antimicrobial activity.*

PT/ST2/0093

GALLIC ACID: A HOPEFUL LEAD FRAGMENT FOR DRUG DEVELOPMENT

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Phenolic acids a subclass of a longer class of metabolites ordinarily referred to as "Phenolics". The phenolic acid speaks to phenols that practically contain one carboxylic acid. These normally occur phenolic acids contain two distinctive constitutive carbon structures; these are hydroxycinnamic acid & hydroxybenzoic acid. Despite the fact that the fundamental skeleton continues as before the no. furthermore, the position of hydroxyl bunches on the fragrant ring makes an assortment. Gallic acid is a phenolic compound. It is synthetically called as 3, 4, 5-trihydroxy benzoic acid. It retains preventive and therapeutic effects in many diseases have an expanded spectrum of activities like antibacterial, anticancer, antimicrobial, anti-inflammatory, analgesic, antioxidant, neuroprotective, anticonvulsant, antiviral, and antidiabetic, etc. Information was collected from various search engines like PubMed, google scholar, research gate, google, link springer, etc. Various sites were retrieved for gathering beneficial information.

Various studies have been revealed to collect information regarding its therapeutic activities. Data collected and presented as review. It is concluded that gallic acid and derivatives plays significant role in conveying therapeutic characteristics to plants, hence it should be considered as hopeful drug molecule.

PT/ST2/0094

CASSIA OCCIDENTALIS AS A POTENTIAL ANTI-INFLAMMATORY AGENT: AN IN-SILICO APPROACH

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Cassia occidentalis L. is a plant with important medicinal values. In Indian system of medicine the plant has been documented as thermogenic, purgative, expectorant, diuretic and is used in the treatment of leprosy, erysipelas, ulcers, cough, bronchitis, constipation, flatulence, dyspepsia, menstrual problems, tuberculosis and anaemia. Selected chemical constituents of the plant *Cassia occidentalis* were screened *in-silico* for their physicochemical properties and drug likeness by using Molsoft software. The selected phytoconstituents were further screened to predict pharmacokinetic properties and were subjected to molecular docking studies by using the Schrodinger's molecular modelling software. Results displayed that most of the phytoconstituents obeyed Lipinski's rule of five, thus confirming that the phytoconstituents possessed drug like properties. It was also observed that the ADME parameters of most of the screened phytoconstituents were within the recommended ranges. Further, on performing molecular docking studies of 25 phytoconstituents with the target protein Human AKT1 (PDBID: 3O96), it was evident that 10 compounds showed better interaction with the protein molecule. Hence, it was concluded that maximum of the screened phytoconstituents of *Cassia occidentalis* have a potential to form the lead molecules displaying anti-inflammatory activity.

Keywords: *Cassia occidentalis, Anti-inflammatory, Lipinski's rule, Drug likeness, ADME studies, Molsoft, Schrodinger, Molecular docking.*

PT/ST2/0095

BIO-ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE SIMULTANEOUS ESTIMATION OF DAPAGLIFLOZIN AND SAXAGLIPTIN IN HUMAN PLASMA BY LC-MS/MS

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Bio-analysis is a sub-discipline of analytical chemistry, associated with the measurement of small and large molecules from biological fluids like blood, serum, plasma, urine, faeces etc. Nowadays, methods of measuring drug in biological media are increasingly important due to the problems associated with Bio-availability and Bio-equivalence studies, drug abuse, Drug Discovery and Drug Development as they are highly dependent on accurately measured drugs in biological samples. Keeping this in the mind, Bio-analytical method has been developed and validated for the simultaneous estimation of **Dapagliflozin and Saxagliptin by LCMS/MS in human plasma. Glimepiride** was used as internal standard and was extracted from human plasma by SPE**.** Chromatographic separation of analytes and internal standard was carried out using a Zorbax C_{18}(50 x 4.6mm,3µm) at 0.5ml/min flow rate, mobile phase used 85:15v/v (ACN:Ammonium Formate). Detection was performed at the transition of 200-600m/z for both drugs and molecular ion of the analytes. The assay of Dapagliflozin was linear over the range of 15-300 ng/ml and 2.5-50ng/ml for Saxagliptin, and the regression coefficient (R^2) was found to be 0.9986 and 0.9995. LOD was 10ng/ml and 1.5ng/ml. LOQ was found to be 25ng/ml and 4ng/ml respectively. The percentage recovery value in human plasma ranged from 99.30-100.56% and 98.28-101.31% and aqueous solution were ranged from 99.60-103.60% and 98.52 - 102.91% respectively for Dapagliflozin and Saxagliptin. The developed method was accurate and precise, and was developed and validated as per USFDA guidelines. The established method can be used to perform pharmacokinetic and bio-equivalence studies in human plasma.

Keywords: *Dapagliflozin, Saxagliptin, Bio-analysis, Glimepiride, LC-MS/MS, US-FDA.*

PT/ST2/0096

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF THIAMETHOXAM BY RP-HPLC METHOD

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Thiamethoxam is presently one of the most effective chemicals for the control of pests. It has a broad spectrum of activity against many types of insects and can be used as a seed dressing. A simple, fast and accurate analytical method was developed and validated for the estimation of Thiamethoxam by RP-HPLC. The separation was achieved by Luna C8 column (5µ 250mm*4.6mm) with a Mobile phase of Methanol and Millipore water (60:40 v/v) with a flowrate of 0.6 ml/min. detection of thiamethoxam was performed by using UV Detector at 254nm and temperature for chromatographic separation was 25°C. The retention time of Thiamethoxam was 2.6 min. The linearity concentration range was from 4 to 64µg/ml and The correlation coefficient (R2) was found to be 0.999. The LOD and LOQ of the method was found to be 0.119µg/ml and 0.399µg/ml. The percentage recovery of Thiamethoxam was found to be 0. 0119. The method was validated concerning system suitability, linearity, accuracy, precision, robustness and ruggedness according to the ICH guidelines.

Keywords: *Thiamethoxam, Pesticides, Organophosphates, Broad spectrum, Validation, Mobile phase, RP-HPLC*

PT/ST2/0097

"ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF HERBAL FORMULATION BY USING HPLC"

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Aim of the study was to establish the Analytical method development and validation of Enzogenol Herbal Formulation.

The study of method development of Enzogenol Herbal Formulation, initially we have used different mobile phase combination with different ratios. Eventually, it was found that the mobile phase consisting of 50 mM potassium dihydrogen ortho phosphate (pH: 2.9 with ortho-phosphoric acid) and acetonitrile (60:40, v/v) provided stronger theoretical plates and peak tailing factor for Enzogenol at a flow rate 1ml/min. After developing the method, it was validated by using different parameters. Based on the obtained results the proposed HPLC method is proven to be suitable as well as found to be simple, precise and economical for the determination of Enzogenol. Based on these results, we conclude that the method which we had developed was precise and accurate for the determination of Enzogenol herbal formulations available in the market.

Keywords: *Enzogenol, Analytical Method Development and Validation, HPLC, Herbal Formulation.*

PT/ST2/0098

MOLECULAR MODELLING STUDIES OF PHYTOCONSTITUENTS AS A B-KETOACYL-ACYL CARRIER PROTEIN SYNTHASE III INHIBITOR IN BACTERIAL INFECTION.

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In the pharmaceutical market, many antibacterial agents are present and used for bacterial treatment but Over usage of antibiotics leads to antimicrobial resistance and it is becoming difficult to treat bacterial diseases with currently existing drugs. The invention of new lead and targets is need of research. The aim of study is to carry out insilico study consist of molecular docking for phytoconstituents were subjected to docking studies to invent a new target for antimicrobial activity. The Schrödinger Maestro 11.3 were used to perform molecular docking of the enzyme β-ketoacyl-acyl carrier protein synthase III (PDB ID: 5BNR) with phytoconstituents. The compounds were docked against targeted enzyme and also performed the ADMET analysis, the lead hits show good results against targeted enzyme. The best binding score are as -7.6(kcal/mol) of Genestein, -7.579 (kcal/mol) of 4- naphthoquinone, -7.351(kcal/mol) of Pelargonidin. The computational study shows that the targeted phytoconstituents shows good binding interactions and also compatible with ADMET parameters. So, with this, we can conclude that the reported phytoconstituents can be potent against bacterial infection. In the future, it can also lead to a potential drug moiety against bacterial infection.

KEYWORDS: β-ketoacyl-acyl carrier protein synthase III, Phytoconstituents, Antimicrobial, Molecular docking, ADMET.

PT/ST2/0099

DESIGN AND SYNTHESIS OF NOVEL ANGIOGENESIS INHIBITORS VIA DUAL TARGETING OF VEGFR2 AND C-MET KINASES.

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Cancer is a disease characterized by uncontrolled cell growth and proliferation, which usually results from the activation of some enzymes. Receptor tyrosine kinases have been observed having over-expression and/or constitutive activation in numerous types of tumors, including colon, breast, ovarian, head and neck, and non-small cell lung cancers.
Nowadays many cases are reported of colon cancers. By taking into consideration this need we have designed dual targeting c-Met and VEGFR-2 inhibitors, which are important targets for cancer treatment.
The molecular docking was performed with Schrodinger software Maestro 11.3. All the synthesized compounds were analyzed by MTT assay. The potent compound was assayed for c-Met and vegfr2.
The synthesized carboxamide derivatives were found potent against c-Met and VEGFR-2. The cell proliferation assay in vitro revealed that the lead target compounds had inhibition potency both on c-Met and VEGFR-2 with IC50 values in the micromolar range, especially compounds SQ1 and SQ2. Based on the further kinase assay in vitro, compound SQ1 was considered as the most potent one, the IC50 values of which were 3.3 uM and 3.5 uM for c-Met and VEGFR-2, respectively. Following that, we docked the compound SQ1 with the proteins c-Met and VEGFR-2 and interpreted the SAR of these analogs. All the results report that SQ1 is a dual inhibitor of c-Met and VEGFR-2. It could be a potent agent against colon cancer.

Keywords: *c-Met, vegfr2, molecular docking, MTT assay, Kinase assay.*

PT/ST2/0100

IN-SILICO DESIGN, SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL EVALUATION OF NOVEL PYRAZINE-2-CARBOXAMIDE DERIVATIVES

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Pyrazine-2-carboxamide (PZA) derivatives are heterocyclic compounds with pyrazine moiety within the ring nucleus. Because of the emergence of multi drug resistance, there is inevitable need for the development of new therapeutic moieties. The present proposal consists of In-silico design, synthesis and biological evaluation of a number of novel Pyrazine-2- carboxamide derivatives with promise for relevant biological activity and using different methods, the structure was confirmed by IR, NMR and MASS spectroscopy. Pyrazine-2-carboxamide derivatives have evaluated for their antibacterial, antiparasitic, antifungal, antitubercular and cytotoxic activities. The synthesis of core intermediate pyrazine-2-carboxylic acid hydrazide starts with the alkaline hydrolysis of starting material (PZA) forming pyrazinoic acid, which on esterification followed by hydrazinolysis give core intermediate in a good yield. The derivatives of PZA/hydrazones were further synthesized in one step by the condensation of core intermediate with the appropriate aromatic/substituted aldehydes Synthesized molecules show moderate anti-inflammatory, antioxidant and cytotoxic activities. PZADA shows better antioxidant and cytotoxic activities whereas PZADC shows better anti-inflammatory activity and promising antitubercular activity. The present study showed that the synthesized compounds possess broad spectrum of biological activity such as in-vitro anticancer, antitubercular, anti-inflammatory and antioxidant activity.

Key words: *Pyrazine-2-carboxamide (PZA); Mycobacterium tuberculosis; In-silico drug design; Lipinski rule.*

PT/ST2/0101

Bio-analytical Method Development And Validation For The Simultaneous Estimation of Aceclofenac And Thiocolchicoside In Human Plasma by LC-MS/MS

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A simple, selective, rapid and precise LC-MS/MS method has been developed and validated for concurrent estimation of Aceclofenac and Thiocolchicoside in human plasma it was enriched with the help of Protein Precipitation technique. Hibar® C18 (5µm, 50 x 4.6 mm i.d.) column is used as stationary and the following eluent is used to separate the aceclofenac and thiocolchicoside Cyanomethane and 10mM Ammonium acetate buffer (pH 4.0) with the ratio 80:20 v/v and the flow rate was fixed 0.5ml/min and the detection was performed by Triple quadrupole mass spectrometry LC-MS/MS using electron spray ionization as positive and negative mode. The calibration curve was consistently accurate for the Aceclofenac and Thiocolchicoside over the range of 785 to 15700ng/ml and 6 to 120ng/ml using Etodolac as internal standard. Limit of Detection (LOD) and Limit of Quantification (LOQ) of Aceclofenac is 1.5ng/ml and 4.5ng/ml and of Thiocolchicoside is 1ng/ml and 3ng/ml respectively. The precision, accuracy and the correlation coefficient (R^2) of Aceclofenac and Diclofenac are within the limits as per USFDA guidelines, so this can be used for the quantification of Aceclofenac and Thiocolchicoside in Human plasma for the study of biomedical and biopharmaceutical sciences.

Key words: *LC-MS/MS, Bio-analytical, Aceclofenac, Thiocolchicoside, Huma*

PT/ST2/0103

Method Development and Validation of *Spirulina Platensis* Formulation by using RP- HPLC

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The spirulina plantensis is a herbal neutraceutical formulation which have a potent potentil as a drug in a wide range of clinical application.*Phycocyanin* is the biologically active compound which is isolated and purified from *Spirulina Plantensis*.The method development of spirulina herbal formulation, initially we have used different mobile phase combination with different ratios. Eventually, it was found that the mobile phase consisting of methanol and 50 mM potassium dihydrogen phosphate (pH: 6.1) in the ratio of (60:40, v/v) on a column of Eclipse plus C_8 (4.6 mm×250 mm, 5.0 µm) at a flow rate of 1 mL min-1. The run time was 10 min under these conditions. After developing the method, it was validated by using different parameters under the guidlines. Based on the obtained results the proposed UFLC method is proven to be suitable as well as found to be simple, precise and economical for the determination and has been routinely adopted technique for the quantification of spirulina herbal formulation. Based on these results, we conclude that the method which we had developed was precise and accurate for the determination of *phycocyanin* in *spirulina* formulation. Also Bioanalytical method development of these drugs will be helpful for *in-vivo* & *in-vitro* studies in future days.

Keywords: *Spirulina plantensis,Phycocyanin*,Method Development & Validation, RP-HPLC.

PT/ST2/0104

DOCKING STUDIES ON PHYTO-CONSTITUENTS AS THERAPEUTIC LEADS AGAINST SARS COV-2

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Researchers are seeking for phyto-candidates that can inhibit or stop SARS-CoV-2 because of the present pandemic. The main protease (Mpro) of SARS-CoV-2 and spike glycoprotein (S) are both suppressed by bioactive compounds found in plants that work by docking them together. The Mpro proteins 6LU7 (complex with an inhibitor N3) and 5C3N (space group C2221) were employed in docking research. PyRx and AutoDock Vina software was used as a docking engine. 22 phytoconstituents were identified were selected from IMPPAT, a manually curated database on the basis of their antiviral effects. Docking results showed that phytoconstituents β-amyrin (-8.4 kcal/mol), Withaferin A (-8.3 kcal/mol), Oleanolic acid (-7.8 kcal/mol) and Patentiflorin A (-8.1 kcal/mol) have shown best results against 5C3N Mpro whereas Kuwanon L (-7.1 kcal/mol), β-amyrin (-6.9 kcal/mol), Oleanolic acid (-6.8 kcal/mol), Cucurbitacin D (-6.5 kcal/mol) and Quercetin (-6.5 kcal/mol) against 6LU7 Mpro Protein. All the compounds were examined for their ADMET characteristics using SwissDock. Present research reports the phytoconstituents along with docking score will be helpful for future drug development against Covid-19 drugs.

Keywords: *COVID-19, Spike glycoprotein, AutoDock Vina, Mpro, docking, artemisnin, withaferin A*

PT/ST2/0105

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF CYPERMETHRIN BY UV SPECTROSCOPIC METHOD

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Cypermethrin is an agricultural pesticide that can residue accumulation which may remain in food causing concern of human health. The aim of this study was to develop a method of quantitative analysis for cypermethrin which generally used by UV chromatographic technique. In this study, cypermethrin analysis was developed with ultra-violent visible spectroscopy. Some poisons may be pure chemicals and others complex natural products Not surprisingly, there is no comprehensive range of tests for all poisons in all samples.

Estimation of organophosphate compound - cypermethrin by analytical method. In this study, cypermethrin analysis was developed with ultra violet visible spectrophotometry where the absorption range is from 220nm to 230nm. UV was mainly used for quantitative analysis and serves as useful tool for structural elucidation. It is often the quickest way to analyze an unusual sample that cannot be conveniently determined by the more rapid instrumental methods of analysis because of lack of calibration curves or knowledge of the interferences likely to be encountered while using other instrumental technique

The techniques are found to be linear, precise, accurate, which demonstrates the reliability of proposed techniques. The developed methods Show superiority over other reported methods due to the short analysis time.

Keywords: *Poisoning, Organophosphates, Pesticides, UV spectroscopy.*

PT/ST2/0106

Virtual screening and Molecular docking of Benzimidazole derivatives as an Antimicrobial agent against Glucosamine-6-phosphate

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Benzimidazole structure contains imidazole ring fused with phenyl ring at 4- and 5-position. Based on the literatures, the antimicrobial activity of benzimidazole derivatives have been studied. It act by forming a covalent adduct with membrane-bound bacterial transpeptidase enzymes [also known as penicillin binding proteins (PBPs)], which involved in the biosynthesis of cell walls. Consequently, they prevent the formation of cell wall, eventually lead to cell wall decomposition and death. In this research we aimed to develop the potent Benzimidazole derivatives for the treatment of microbial infections through *in-silico* screening. Based on the above concept, the pharmacophores Benzimidazole with some electron withdrawing and donating groups were chosen from ZINC database drug library, from which 80 compounds were selected and targeted for antimicrobial action. The selected leads from database were optimized via molinspiration, ADMET property and Drug-likeness score. Then the optimized compounds were subjected to prediction of binding interactions with glucosamine-6-phosphate (1JXA.pdb) by using molecular docking study through iGEMDOCK 2.1 software. The results show that the compounds BZI 3 (ZINC54275), BZI 56 (ZINC1910616), and BZI 57 (ZINC3782818) were found to have a binding energy of -113.769, -106.011, and -100.83 Kcal/mole respectively. In addition, these compounds were evaluated for antimicrobial activity by *in-vitro* studies.

Keywords: Benzimidazole derivatives, Virtual screening, glucosamine-6-phosphate, Molecular docking.

docking, *in-vitro* evaluation, Antimicrobial action.

PT/ST2/0107

HPLC METHOD FOR ANALYSIS OF CETILISTAT IN TABLETS

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Cetilistat is chemically 2-hexadecoxy-6methyl-3,1-benzoxazin-4-one with molecular formula $C_{25}H_{39}NO_3$ and molecular weight 401.6g/mol. It is used in the treatment of obesity. Cetilistat is soluble in methanol, acetonitrile. Cetilistat is not official in any pharmacopoeia.

A reverse phase HPLC method was developed for quantitative determination of Cetilistat in tablets. The separation was achieved by using 250×4.6mm Hyper Clone™ C18(5µm) column with a mixture of methanol: acetonitrile(40:60) as a mobile phase, at a flow rate of 1.0ml/min. The detection was carried out at 228nm, and retention time was found to be 4.88min. Linearity was observed in the concentration range of 0.2-8µg/ml. The mean percentage recovery at three different levels for Cetilistat ranged from 99.75 to 101.66%w/w. The LOD and LOQ was found to be 0.270µg/ml and 0.819µg/ml respectively. The % RSD for intraday and interday precision, repeatibity and reproducibility was found to be less than 2%. The % assay was found to be 101.282%w/w. The method was validated in accordance with ICH guidelines and was found to be accurate, precise and rapid for analysis of Cetilistat in bulk and in tablets.

KEYWORDS: HPLC, Methanol, Acetonitrile, Cetilistat, Validation.

PT/ST2/0108

DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR SIMULTANEOUS DETERMINATION OF AZELNIDIPINE AND TELMISARTAN IN TABLETS

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Hypertension is recognized as a major risk factor for cardiovascular and renal diseases and represents the leading cause of mortality worldwide. In spite of proven benefits of hypertension treatment, blood pressure control rates are poor, even in high-income countries with virtually full-access to therapies. Nearly 75% of hypertensive patients do not achieve adequate control with monotherapy, thus needing combination treatment. Currently, preferred combinations an angiotensin-receptor blocker and calcium channel blocker. Some patients will also require a triple combination to achieve blood pressure control.

RP-HPLC method has been performed on phenomenex BDS C18 column (250 × 4.6 mm, 5µ) using the mixture of Methanol 95% and phosphate buffer (pH 4.5) 5% and with Acetonitrile in the ratio of 90:10 as mobile phase. The flow rate was maintained at 1.5mL/min and analytes were monitored at 243nm. The retention time for Azelnidipine and Telmisartan was found to be 6 and 9min respectively with resolution more than 3. The peaks obtained were symmetrical with tailing factor less than 2 and theoretical plates more than 2000. The developed method was validated in accordance with ICH guidelines.The method was found linear in for azel and tel the concentration range of 1-500µg/ml and relative standard deviation of the precision study was about 2.0%. The assay results was found 100.33 (±2.01) and 109 (±1.94) % with mean % Recovery 100.06 and 109 for Azelnidipine and Telmisartan respectively

Keywords: . *RP-HPLC Azelnidipine , Telmisartan, Methanol,Acetonitrile, Validation.*

PT/ST2/0109

"DEVELOPMENT AND VALIDATION OF ANALYTICAL METHOD USING RP-HPLC FOR QUANTIFICATION OF TRIAMCINOLONE ACETONIDE IN NANOSTRUCTURED LIPID CARRIERS"

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The goal of this research is to provide a sensitive, selective, precise and accurate RP-HPLC technique for analysing Triamcinolone acetonide in NLCs. Using Phenomenex C-8 (100mm×4.5mm, 5µm) column, mobile phase combination of methanol and 0.1% TFA in milli-pore water (60:40) in an isocratic elution, successful chromatographic analysis of Triamcinolone acetonide was accomplished. The mobile phase flow rate was 1.2 mL/min, column temperature was 40°C, and injection volume was 10µL. An UV detector was used to detect the RT, which was discovered to be 2.7 minutes.

The devised approach was proven to be specific for Triamcinolone acetonide analysis in NLCs matrix, accurate (>90%) & precise (%RSD NMT 2%). The validated technique was used to determine % DEE, % DL of TA in NLCs enriched formulations, and % drug release (*in vitro*). Since, results showed credibility, this validated RP-HPLC approach could be applied to identify and quantify drugs in other lipid-based nano-formulations like NLCs.

Key words: RP-HPLC method, Triamcinolone acetonide, Analytical method development, ICH guidelines, NLCs.

PT/ST2/0110

A NOVEL VALIDATED STABILITY INDICATING UHPLC METHOD FOR SIMULTANEOUS ESTIMATION OF DEGRADATION BEHAVIOR OF BUPROPION AND NALETREXON IN BULK AND PHARMACEUTICAL DOSAGE FROMS

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A new method was established for simultaneous estimation of Bupropion and Naletrexon by UHPLC method. The chromatographic conditions were successfully developed for the separation of Bupropion and Naletrexon by using Inertsil C_{18} 5µm (4.6*250mm) column, flow rate was 1.0 ml/min, mobile phase ratio was Phosphate buffer (0.05M) pH 4.6: ACN (30:70% v/v) (pH was adjusted with orthophosphoric acid), detection wave length was 275nm. The instrument used was Agilent Technologies UHPLC Auto Sampler, PDA Detector. The retention times were found to be 2.3 and 2.8 minutes for Bupropion and Naletrexon. The % purity of Bupropion and Naletrexon were found to be 100.7% and 101.4% respectively. The analytical method was validated according to ICH guidelines (ICH, Q2 (R1)). The correlation coefficients (r2) were found to be 0.9995 and 0.9997, for Bupropion and Naletrexon. The % mean recovery was found to be 100% and 100.5%, %RSD for repeatability was 0.2 and 0.4, % RSD for intermediate precision was 0.5 and 0.1 respectively. The precision study was precise, robust, and repeatable. Hence the suggested UHPLC method can be used for routine analysis of Bupropion and Naletrexon in API and Pharmaceutical dosage form.

Keywords: Inertsil C_{18}; Bupropion and Naletrexo; PDA Detection; Agilent UHPLC

PT/ST2/0111

SPECTROPHOTOMETRIC ESTIMATION OF SULFAMETHOXAZOLE IN PHARMACEUTICAL PREPARATIONS USING DIFFERENT CHROMOGENIC AGENTS

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Drugs in both their pure and formulated forms are frequently analyzed using visible spectrophotometric techniques. Comparing visible spectrophotometry to UV and chromatographic techniques, it has a high level of sensitivity. As a result, the objective of our research is to create a novel, sensitive visible spectrophotometric technique for the quantification of the antibiotic sulfamethoxazole employing-naphthol as a diazo coupling reagent. Sulfamethoxazole pure drug was obtained from INDYKO ORGANICS PVT. LTD. SOLAPUR (MS). The spectrophotometric estimate was performed using only analytical-grade chemicals and solvents. For the determination of sulfamethoxazole under acidic circumstances, a Shimadzu UV visible double beam spectrophotometer was used. The production of all reagents, including the 0.5 percent w/v of -naphthol, 0.1 percent sodium nitrite, and stocks solution of 1000 g/ml sulfamethoxazole, involved the use of conductivity water. Under acidic conditions, the sulfamethoxazole reacted with sodium nitrate to form a highly reactive intermediate. This intermediate then reacted with -naphthol to produce a stable purple Diazo complex. The analysis was done at 520 nm, and the method was optimized and verified by ICH Guidelines. The range of color intensity was shown to be linear in a concentration ranging from 40-140 ng/ml. All of the validation parameters were determined to be within an acceptable range, indicating that the method was sensitive and that the LOQ value was 40 ng/ml. It was discovered that the visible spectrophotometric approach, which was created for estimating sulfamethoxazole in pharmaceutical preparations using various chromogenic chemicals, is accurate, precise, repeatable, and complies with the criteria for green chemistry. The technique was approved by ICH recommendations. The creation of such a method can be used for pharmacokinetics research of newly created sulfamethoxazole HCl formulations.

Key Words

a-naphthol, Sulfamethoxazole, Visible spectrophotometric, precision, linearity

PT/ST2/0112

PHARMACOPHORE MODELLING, MOLECULAR DOCKING, ADME ANALYSIS OF NOVEL QUINOXALINE DERIVATIVES AGAINST TUMOR NECROSIS FACTOR ALPHA IN INFLAMMATORY BOWEL DISEASE

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The heterocyclic compound quinoxalines consist of a pyrazine ring and benzene ring. Their research has grown tremendously as a result of the discovery of numerous biological effects, including anti-tumor, anti-inflammatory, anti-bacterial, and others. In the current work, we used Marvin Sketch to obtain the 3D structures of our quinoxaline derivatives. TNF-α (Tumor necrosis factor alpha) a potential protein target for inflammatory bowel disease was selected. To determine how well our derivatives are bound to the targets, molecular docking was carried out using Autodock Vina software. The PLIP (Protein-ligand Interaction Profiler) server and BIOVIA Discovery Studio Visualizer were used to analyse the amino acid interactions. Our quinoxaline derivatives demonstrated the lowest binding energies. The pharmacophore modelling of our quinoxaline derivatives was done using Pharmagist. We obtained 59 hits. ADME (Absorption, Distribution, Metabolism, and Excretion) analysis was done on the top 20 hits using SwissADME. And we discovered that the compound ZINC48262485 passed the ADME and had the lowest binding energy against the target TNF-α, implying that it could be used as a potential lead molecule in the treatment of inflammatory bowel disease.

Keywords: *Quinoxalines, Molecular docking analysis, Tumor necrosis factor alpha, Anti-inflammatory, Inflammatory bowel disease.*

PT/ST2/0113 PAID

PHARMACOPHORE MODELING AND DRUG REPURPOSING TOWARDS DISCOVERY OF INHIBITORS AGAINST ALZHEIMER'S DISEASE

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Alzheimer's disease is currently treated with medications that provide symptomatic alleviation. This is why effective drug candidates are critical for addressing the disease's fundamental cause. Beta-amyloid is one of the most promising targets. It's critical to keep beta-amyloid fragments from clumping together and forming plaques. Focusing on beta-secretase, an enzyme that breaks amyloid precursor protein to produce beta-amyloid plaques, one of the disease hallmarks that causes inflammation and disease development, is crucial. In this study, 300 hits identified through pharmacophore modeling were docked with the BACE1 (β-site amyloid precursor protein cleaving enzyme 1) protein using a python script-based method with autodock Vina. Top compounds with low binding energy and high affinity were next examined for toxicity and ADMET to ensure the drug's safety. The active residues were then analyzed with the help of PLIP and Ligplot. ZINC7786887, ZINC69652035, and ZINC91064451 may serve as lead molecules that can be potent BACE1 inhibitors. Further molecular dynamic simulation was done using the iMODS server for ZINC7786887. iMODS (Internal Coordinates Normal Mode Analysis Server) includes better affine-model-based arrow representation of domain dynamics and advanced visualization tools for demonstrating collective motions.

Keywords: *Amyloid precursor protein, BACE1, molecular docking, pharmacophore, virtual screening, molecular dynamic simulation.*

PT/ST2/0114

UHPLC METHOD DEVELOPMENT, VALIDATION AND FORCED DEGRADATION STUDY FOR SIMULTANEOUS ESTIMATION OF PHENTERMINE AND TOPIRAMATE IN BULK AND TABLET DOSAGE FORM

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A novel approach was used to develop and validate a rapid, specific, accurate and precise Ultra Performance Liquid Chromatographic (UHPLC) method for the simultaneous determination of Phentermine and Topiramate in pharmaceutical dosage forms. The chromatographic separation was achieved on Aquity UPLC BEH C_8 100 x 4.6 mm, 2.7 µm, column using a mobile phase ammonium acetate Buffer PH 4.5:Acetonitrile:Methanol in the ratio of 60:20:20. The flow rate was 0.5 mL min^{-1} and the detection wavelength was 263 nm. The limit of detection (LOD) for phentermine and Topiramate was 0.46 and 1.97 µg mL^{-1}, respectively. The limit of quantification (LOQ) for phentermine and Topiramate was 1.5 and 6.51 µg mL^{-1}, respectively. This method was validated with respect to linearity, accuracy, precision, specificity and robustness. The method was also found to be stability-indicating.

Keywords: Phentermine and Topiramate; UHPLC; Forced Degradation method; ICH Validation;

PT/ST3/001

Antidiarrheal Activity of Aqueous Seed Extract of Albizia amara (Roxb.) in Mice

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Abstract: Albizia amara is used to treat rheumatism, cough, stomach ache, diarrhea in folklore medicine. The present work aimed at evaluating the antidiarrheal activity of A. amara aqueous extract of the seeds in mice. The extract was procured from Vital herbs, Delhi. Swiss albino mice weighing between 25–30 g were fasted for 12 hours and grouped into five of six each. The negative control Group I was orally administered with deionized water 10 ml/kg. Group II (positive control) received the standard drug Loperamide (3 mg/kg p.o.). The disease control was Groups III which has received magnesium sulfate 2g/kg. Group IV and V received aqueous seed extract of Albizia amara at the dose of 500 and 1000 mg/kg p.o. respectively. Diarrhea was generated by giving 2 g/kg magnesium sulfate one h later to the pretreatment with the extract and Loperamide. Two hours later to the administration of magnesium sulfate, the control group mice produced significant wet feces without mucus. The pre-treated mice with aqueous Albizia amara seed extract at the higher dose 1000 mg/kg showed 58.8% little better activity as compared with lower dose 500 mg/kg (42.1%) treated group. The highest activity with standard loperamide of 3 mg/kg of 70.6% having P<0.001. The present experiment showed antidiarrheal activity in magnesium sulfate induced diarrhea and thereby proving scientifically its folklore claim. From the above results, it can be concluded that the aqueous seed extract of A. amara has shown the anti-diarrheal activity.

Keywords: Albizia amara, diarrhea, magnesium sulphate, mice

PT/ST3/004

Evaluation of immunomodulatory effect of aqueous extract of Bauhinia variegata L. leaves

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Abstract: Immunology is a natural mechanism of living organism to protect their health from various ailments. It was observed that natural products have potential to modulate immune system of human beings either by stimulating or depressing it. This approach was being used over the time by medicinal practitioners to treat the ailments. This study was also planned to ascertain the immunomodulating potential of one of the Indian traditional medicinal plants Bauhinia variegata L. The dried and coarsely powdered leaves of Bauhinia variegata L. was extracted with water by decoction method and the extract was then dried and made free from solvent. That aqueous extract of Bauhinia variegata L. (BVAE) was screened for immunomodulating activity by heamagglutination reaction for humoral and delayed type hypersensitivity study for cellular immune responses. The sheep RBC (5X109 cells/ml) and levamisole were used as antigen and standard drug, respectively, in both the studies. The extract of plant material (BVAE) showed a dose dependent response in these studies. BVAE 400 mg/kg p.o. dose showed a significant (p<005) high antibody titre (7.13± 0.17) among all the doses of plant material and levamisole showed higher antibody titre (p<001, 7.87± 0.19) in humoral immune response study. BVAE at 400 mg/kg p.o. dose also showed significant (p<005) immunomodulatory effect in delayed type hypersensitivity study. Hence, the findings of the present study proposed immunomodulatory effect of aqueous extract of Bauhinia variegata L. and 400 mg/kg, p.o. dose of the extract was found to be potent among other doses.

Keywords: Bauhinia variegata, Cellular immune response, Heamagglutination, Humoral study, Immunomodulation.

PT/ST3/005

TITLE: EXTENSIVE EVALUATION OF POLYHERBAL TOPICAL FORMULATIONS FOR VARIOUS SKIN RELATED DISORDERS.

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ABSTRACT: Skin disease is a common ailment and it affects all ages from the neonate to the elderly and causes harm in number of ways. There are more than a thousand conditions that may affect the skin but most skin diseases can be categorized rashes, viral infections, Bacterial infections, fungal infections, and Parasitic infections, Pigmentation disorders, Tumors and skin cancers and Psoriasis. The present research focus on the formulation Polyherbal formulation of Manjishta, Guduchi, Aloe vera and Neem. The authentic phytochemical constituents of individual plants Manjistha, Guduchi, Aloe Vera, Neem Oil and Moringa Oil with different ratio used to prepare Polyherbal formulations to achieve the desirable antifungal effects. Optimized formulation evaluated for antimicrobial and anti-inflammatory activity against various methods like measurement of pro-inflammatory and anti-inflammatory cytokines (TNF-α, IL-1 α and IL-10) production. Formulations with good antimicrobial activities were tested against MDR microorganism. Polyherbal formulations are tested for Multi drug resistant organisms such as Candida albicans fungi found effective and also against various Multidrug resistant bacterial strains too. Conclusion of this research work that mainly emphasizing importance of the polyherbalism and its significant use in skin disorders.

Keywords: Psoriasis, TNF-alpha, Polyherbalism, Antimicrobial.

PT/ST3/008

Virus like particles (VLP) as Antigen delivery system for Immunotherapeutic vaccination.

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Abstract: Virus-like particles (VLPs) are proficient in both prophylactic and therapeutic prevention against their source virus or heterologous antigens. The particulate form and repetitive structure of VLPs makes them suitable for matching the exact criteria of antibody stabilization. Epitopes delivered by VLPs can be presented on MHC-II for stimulation of a humoral immune response, or cross-presented on MHC-I leading to cell-mediated immunity. VLPs as particulate subunit vaccine carriers are showing promise in preclinical and clinical trials for the treatment of many conditions including cancer, autoimmune disorders and allergies and for all influenza viruses. It mediates as ideal delivery system for wide range of varieties of antigenic material. VLPs are ideal candidate vectors for development of future vaccines. We designed & Illustrated virus-like particles via virtual morphological tools to deliver antigen which fit on dendritic cells (Antigen presenting cells) surface to produce robust immunological defense against any immunological diseases including cancer cell immunotherapy, autoimmune disorders & against viral infection. This immunotherapeutic vaccination concept will help in development of vaccine against any new viruses that may threaten the world in form of pandemic.

Keywords: Virus like particles, MHC-I, autoimmune disorders, dendritic cells, prophylactic

PT/ST3/009

Luffa aegyptiaca Graft : As Double edged sword

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Abstract: Tissue engineering has bifocal ability to treat contrast diseases in the same platform. Our Scaffold has bifocal activity which promotes angiogenesis & anticancer activity through natural stimulation & deactivation within the humoral system. The graft has been made by decellularization of Luffa aegyptiaca & micro layering of cationic amphipathic peptides (human lactoferrin) on graft. We used detergent free decellularization technique that isolate clear vasculature of Luffa aegyptiaca which gives high surface area, excellent water transport & retention, interconnected porosity, pre-existing mimicking mammalian vasculature vast mechanical property having wide range of applications in regenerative medicine. The following method describes to remove cellular debris & protocol isolates vasculature by detergent free method by using 10 % Sodium Carbonate ,5% (v/v) bleach (NaClO) solution along with micro layering of cationic amphipathic peptides(lactoferrins) on graft by resin electrode method. Biocompatibility of plant derived decellularized cellulose scaffold has been demonstrated by In-vivo experiments in mice in which we found graft rejection up to zero scale. The preparation & transplantation of grafts was carried out by sterility, sepsis, and pain relief protocols as per Biomedical Research guidelines of ICMR. This strategy depicts gradual release of transferrins in surrounding tissue which targets only cancerous cells as well as retards post traumatic inflammatory reactions with promotion of angiogenesis process for faster wound healing process.

Key words: Luffa aegyptiaca,cationic amphipathic peptides, decellularization, anti-cancer activity, wound healing.

PT/ST3/0010

Murraya koenigii (Curry Plant) - A review on its Phytochemical & Medicinal properties

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ABSTRACT: Therapeutic plants are utilized in herbalism and remembered to have a few restorative properties. They structure the effectively accessible hotspot for medical services purposes in rustic and ancestral regions. Ethanobotany is an unmistakable part of innate science managing different viewpoints like humanities, botany, ecology, economics & medicine, religious, cultural and few different disciplines. The Murraya koenigii plant is broadly utilized as spice, flavour, toppings and furthermore used to treat different kinds of sicknesses in Indian conventional framework. World's around 80% population depends upon natural items, since they have been considered as protected, powerful and efficient. The current review was planned to survey the ethanobotanical properties, phytochemical and pharmacological properties of Murraya koenigii plant. The different part of this plant is generally utilized by various ancestral networks. The leaves of plant are use as tonic, stomachic, carminative, internally in diarrhoea, vomiting. Utilized as antihelmenthic, pain relieving, cure piles, allay heat of the body, thirst, inflammation and itching. Following various claims for cure of numerous diseases, efforts have been made by specialists to check the viability of the plant through logical organic screening. An examination of writing uncovers a few remarkable pharmacological exercises of the plant, for example, action on heart, hostile to diabetic and cholesterol lessening property, antimicrobial action, and antiulcer activity, antioxidative property, anti diarrhoea activity, phagocytic action and a lot more restorative qualities.

Key words: Antioxidant, Antimicrobial, ethanobotanical, antihelmenthic, Ayurveda , Pharmacological activity

PT/ST3/0011

WHEATGRASS (TRITICUM AESTIVUM LINN.): MEDICINAL VALUE

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ABSTRACT: Wheatgrass is the youngest stage of the normal wheat plant biologically called Triticum aestivum which belongs to the Poaceae family. Wheatgrass is regularly used in many forms such as juices, powders, cans, pills, tablets. It is also known as the powerhouse of nutrients and supplements.The presence of 70% chlorophyll wheatgrass juice is commonly named as "Green blood", which is almost chemically identical to haemoglobin. Biologically active compounds and minerals present in wheat grass like antioxidants, enzymes, vitamins, and different important nutrients which might be used to improve lungs and coronary heart function. Wheatgrass juice is similarly taken as a weight loss supplement & to enhance the immune system. In a previous study it is proved that the structure of hemoglobin & chlorophyll in wheatgrass is similar and can act as a substitute for hemoglobin in hemoglobin deficiency conditions. Medicinal value of this nutritive plant is high which is used to cure diseases such as cancer, diabetes, ulcer, rheumatoid arthritis, hyperlipidemia, thalassemia, anemia, kidney stone, asthma, digestive problems, and skin diseases. Pharmacologically active wheatgrass consists of pharmacological actions such as antidiabetic, antiallergic, antioxidant, antiulcer, antitumor, hepatoprotective, cardioprotective, anti-inflammatory and antiarthritic action. This study provides a brief overview of wheatgrass, its pharmacological activities, and Phytochemical study.

Keywords: Antioxidant, Anti-cancer activity, Wheat Grass juice, Haemoglobin, Triticum aestivum, enzymes, vitamins, nutrients.

PT/ST3/0013

Perceptive Role of Fungal Gardens in Colonial Insects Ants and Termites

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Abstract: Nature has devised various types of interelationship between different groups of organisms that enable them to survive or ultimately run into peril. One of the most beautifully and meticulously articulated relationship among living organisms is symbiosis. Before humans began practising agriculture, three insect lineages termites, ants, and beetles independently gained the capacity to cultivate fungi for sustenance. This occurred about 40–60 million years ago. The most interesting group of insect known to cultivate some of the most magnificent fungal gardens is perhaps the leaf-cutting ants and the mound-building termites. These have several adaptations and their life style is suited for nutrition drawn from the fungal associates. Both termites and ants can now live in resource-rich niches that were previously inaccessible because to the agricultural symbiosis with fungi. Termite, ant and beetle farmers appear to have made the transition to fungi culture via different evolutionary avenues. In the termites, fungi probably were an important food source before true cultivation and fungi culture arose when the termites secondarily developed an ability to manipulate fungal growth in their nests. The present review describes the perceptive role of fungal gardens in colonial insects like ants and termites.

Keywords: Ants, Beetles, Fungal gardens, Fungi culture, Termites.

PT/ST3/0014

Evaluation of In Vitro Anticancer activity of Balanites aegyptiaca (L.) Delile Leaves.

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Abstract: The present investigation dealt with the anticancer activity of Balanites aegyptiaca (L.)Delile Leaves. The MTT assay was used to assess the anticancer activity against hepatocellular carcinoma (Hep G2), breast cancer (MCF 7) cell lines. Triplicate samples were analyzed by measuring the absorbance of each sample by a microplate reader (wavelength of 550 nm) at various concentrations from 10 to 160 µg and preliminary phytochemical screening has been performed using standard procedure. A Balanites aegyptiaca leaf was extracted in Soxhlet assembly with successive method by using various solvents according to polarity of solvent. Preliminary phytochemical screenings of various extracts of the whole plant were done. Different extracts were tested on MCF 7 & Hep G2 cell line cell line by using MTT method and In vitro Breast& Liver anticancer activity was also carried out. At the different Concentration, Ethanolic extract showed good activity against MCF-7 & HeG-2 cell line. The preliminary phytochemical screening revealed presence of flavonoids, steroids, tannins and saponins.

Keywords: Balanites aegyptiaca, MTT assay, Hep G2, MCF 7

PT/ST3/0015

A PRELIMINARY STUDY ON VARIOUS PHYSIOLOGICAL PARAMETERS AND ESTIMATION OF TOTAL PHENOLIC, FAVONOIDAL CONTENTS OF HYDRO ALCOHOLIC EXTRACTS OF KALANCHOE PINNATA AND FICUS RACEMOSA.

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Abstract: Kalanchoe pinnata (KP) is commonly known as Cathedral bells belongs to the family Crassulaceae. Ficus racemosa (FR), a well known standard-sized tree in the family Moraceae. Both the plants are collected from Kurnool, Andhrapradesh, and Authenticated by Dr. K. Venkata Ratnam, Assistant Professor, Department of Botany, Rayalaseema University, Kurnool. Voucher specimens were preserved in the herbarium with voucher numbers RU871, RU872. In the present study Leaves of both the plants are extracted with aqueous alcohol in 70:30 ratio, The Percentage yield was 3.9, 5.5 in KP and FR respectively. preliminary phytochemical screening is done and found various phytoconstituents like Alkaloids, Tannins, Flavonoids, Glycosides, Phenols and Terpenoids in both extracts, various physiological parameters like Loss on Drying, Total ash, Acid insoluble ash, Water soluble ash, Swelling Index, Foaming index were performed. The total phenolic contents were estimated as 54.85±0.149% w/w and 48.89±0.261 %w/w equivalent of gallic acid respectively. Flavonoid contents were found as 65.24±0.672mg/g and 46.32±2.273mg/g of quercitin equivalent respectively. My further studies are aiming to structural elucidation and the anticancer activities of specific compounds in both the extracts.

Keywords: Kalanchoe pinnata, Ficus racemosa, Crasulaceae, Moraceae.

PT/ST3/0016

ROLE OF NUTRACEUTICALS IN DIABETES

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ABSTRACT: In recent times there is a growing interest in Nutraceuticals which give health benefits and are indispensable to ultramodern drug. The term Nutraceutical was chased by combining the term" Nutrition" and" Pharmaceutical" in 1989 byDr.Stephen DeFelice.MD, Author and Chariman of the alleviation for Innovation in Medicine. Nearly two thirds of the World's6.1 Billion people depend upon the Healing Power of Plant grounded accoutrements for numerous reasons- Vacuity, Affordability, Safety or belief in Traditional cures. Nutrients, herbals and salutary supplements are major ingredients of Nutraceuticals which make them necessary in maintaining health, act against colorful complaint conditions and therefore promote the quality of life. It's important to notice that there are no strict medicinal regulations on Ayurvedic and nutraceutical health products in India.For Example Vitamin D, then could also be a need to understand the part of nutrition, beyond Calcium and vitamin D, within the treatment and forestallment of Osteoporosis in Grown-ups and also The part of vitamin D in the pathogenesis and forestallment of Diabetes has sparked wide interest. Vitamin D mediates the exertion of beta- cell calcium-dependent endopeptidases promotes conversion of proinsulin to insulin and increases Insulin affair. Vitamin D enhances insulin action via regulation of the calcium pool and also acts as an Immunosuppressant. VitaminD supplementation has shown to reduce the threat of developing type 1 diabetes. Prospective clinical studies on vitamin D are needed to forcefully establish the part of vitamin D in the forestallment and operation of diabetes.

KEY WORDS: nutraceutical, vitamin d, beta-cell calcium-dependent endopeptidase, immunosuppressant, insulin, glucose forbearance

PT/ST3/0017

SEABUCKTHORN AQUEOUS MALT

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Abstract: In today's outline of lifestyle adult and young adult are having a routine major problem of deficiency of multivitamin are having of routine major problem of deficiency of multivitamin, amino acids, omega and fatty acids, bone disorder, skin dullness, and unsuceptible to immunity. So to overcome this we have a convenient solution to this routine problem which is our seabuckthorn aqueous malt. Our main objective to provide a patient healthy life with minimum side effect .To defend them from long time adverse effect .We have observe the following parameters that is its stability,odour,assay of active ingredient , degradation product, environmental factor,etc. So we have concluded to have a uncomplicated formulation regarding this routine problem. This malt is having its active constituent – the extract of Seabuckthorn for skin dullness, amino acid and major omega deficiency,the extract of neem and moringa for hair growth as a rich source of biotin for hair growth follicles and bone and joint pain.The extract of Tulsi and amla for immunity boosters. This formulation is for both medicinal and nutritional purpose . This is to overcome regular deficiencies with enhancing immune response. This is a major problem in women regarding biotin deficiency and a considerable amount of hair loss after post delivery , and different medication. Due to lack of healthy diet there is an insucceptible immunity in specially pediatric population. This formulation leads to provide an convenient way to consume , easily managable in hectic schedule in daily lifestyle , lack of time, increase willingness to adhere to medication, maximum therapeutic effect. This formulation leads to have a healthy benefit to patient as a allopathic drug are stumbling block to it due to their quick effect for short time leads to drug toxicity. This lead long term use with no or less side effect for this regular problems. This formulation is for all grades of people specially for gediatric and pediatric population.

Keywords ; Seabuckthorn , Routine biochemical problems, sourse of omega 3, Maximum therapeutic effect, side effect, Immunity boosters, Gediatric population, Toxicity, Convinent way .

PT/ST3/0018

HERBAL INSECT REPELLENT – A REVIEW

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Abstract: Plant-based repellents have been practical for generations in traditional practice as a personal protection method against different species of female Anopheles mosquitoes. Knowledge of traditional mosquito repellent plants is a important resource for the development of new natural products as an alternative to chemical repellents for eg N,N diethylbenzamide, N, N-diethyl-meta-toluamide . Many studies have reported proof of repellant activities of plant extracts or essential oils against the disease of malaria .This systematic review aimed to assess the effectiveness of plant-based repellents against the different species of female Anopheles mosquitoes. All eligible studies on the repellency effects of plants against the female Anopheles mosquitoes. Beever stated that many of these attractants, for example CO2, organic acids, and aldehydes, have been identified and linked to specific receptor proteins. Newby stated that mosquito-transmitted diseases like Chikungunya virus, dengue, and malaria affects the hundreds of millions of people at risk and still affected more than half a million people every year. Benelli & Mehlhorn stated that access to effective repellent products is limited in more countries. People with a high risk of mosquito -borne disease infections often have no or only insufficient means to protect themselves. Herbal drugs of turmeric have an insect control property; its product has been found active as insect repellent and insecticidal agents. Otherwise lemon eucalyptus oil in 1940's one of the most natural repellant, also the lavender, cinnamon oil, soybean oil, tea tree oil has the repellent property.

Keywords: Herbal, Insect repellent, Lavender, lemon eucalyptus oil, N,N diethylbenzamide.

PT/ST3/0020

Preliminary Phytochemical screening, estimation of polyphenols and antioxidant activity of Bombax malabaricum, Desmodium gangeticum and Ocimum sanctum extracts.

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Abstract: The bark extract of Bombax malabaricum, aerial parts extract of Desmodium gangeticum and leaves extract of Ocimum sanctum were analysed for presence of phytoconstituents and free radical scavenging activity. Phytochemical profiling was done by methods given in literature and free radical scavenging activity was determined by DPPH assay. Quantitative determination of phytoconstituents was done by total phenolic content assay, total flavonoid content assay and total tannin content assay. All these three extracts show significant antioxidant activity which is compared with standard ascorbic acid and Cariya tablets. All three extracts showed the presence of phenolic compounds, flavonoids, tannins and alkaloids. The bark extract of Bombax malabaricum contained 144.1mg/gm phenolic content, 72.6 mg/gm total flavonoids content, and 125.0 mg/gm of total tannin content. The Desmodium gangeticum extract of contained 107 mg/gm phenolic content, 68.2 mg/gm total flavonoids content, and 118.7 mg/gm of total tannin content. The extract of Ocimum sanctum contained 109 mg/gm phenolic content, 76 mg/gm total flavonoids content, and 93.7 mg/gm of total tannin content. This research work elucidated that all three extracts have strong antioxidant activity almost same as that of standard.

Keywords: Bombaxmalabaricum, Desmodiumgangeticum, Ocimum sanctum

PT/ST3/0021

Isolation of marker Compounds from Andrographis paniculata leaves towards achieving chemical standardization

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Abstract: recent years plant-derived products have become increasingly popular all around the world, necessitating extensive research into the safe, efficacious, and rational use of herbal treatments. Thus, need for standardization of herbal drugs is vital in industrial sector. Andrographis paniculata (Nees) belonging to the family Acantheceae, is an extremely bitter plant widely distributed in all the parts of the country. The active principle was discovered to be diterpenoid lactone, which has a wide range of pharmacological properties. Among the pharmacological activities reported are anti-diabetic, antioxidant, anti-inflammatory, antiallergic, immunomodulatory, gastroprotective, central nervous system depressant, hepatoprotective, neuroprotective, antithrombotic, cardiovascular choleretic, wound healing, and anticancer activity. The objective of this research was to isolate and standardise the marker compounds present in ethyl acetate extract of the leaves. Open column chromatography with gravity flow was used to isolate the compounds. The solvents are charged in order of increasing polarity. The compounds are isolated based on the distribution coefficients of the sample or sample mixture towards the stationary and mobile phases. TLC profiles were developed for various fractions isolated. Re-chromatography technique was used to further purify the fractions having a mixture of compounds. Melting point, 1HNMR, 13CNMR, and Mass chromatographic techniques were used to characterise the separated phytoconstituents and the structural elucidation of these compounds has been carried out. The phytochemical investigation of four constituents isolated from ethyl acetate extract of Andrographis paniculata leaves confirmed the presence of 14 deoxy 11,12 didehydro - andrographolide, 7-0 methylwogonin, skullcapflavone and andrograpanin.

Keywords: Andrographis Paniculata, Isolation, Column chromatograph

PT/ST3/0023

In-Silico Screening of Phytomolecules against Multiple Targets for Wound Management

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Abstract : Wound healing today continues to remain a challenging problem, especially in the case of chronic wounds including burn wounds. With an alarming increase in wound statistics, & with limitations in drugs/preparations available in their effective management, identification of newer molecules acting on multiple targets in the wound healing process is necessary. This research paper focuses on the identification of new phytomolecules for wound management using suitable in silico tools like shape & structure-based similarity studies, docking studies, & binding energy calculations. Initially, phytomolecules from the Zinc Natural Molecule database were screened for shape similarity against established phytomolecules such as curcumin, chromogenic acid, gallic acid, & quercetin.The best molecules identified were further docked on multiple promising wound healing targets like TNF-α (Tumor necrosis factor-alpha), FGF (Fibroblast growth factor), TGF-β (Transforming growth factor-beta). Based on the docking scores, binding energies & interaction studies, Fluorophenyl(5-(5-chloro-1-(2-fluorophenyl)-2-oxopentyl)-4,5,6,7-tetrahydrothieno[3,2-c]pyridine-2-yl acetate) ligand exhibited affinity with favourable binding interactions with TNF- α (-7.1 Kcal/mole), FGF (-6.9 Kcal/mole) &TGF- β (-5.1 Kcal/mole). Also 2,4methoxybenzylidene-(-3)-oxo-2,3-dihydro -1-benzofuran-6-yl-4- methoxybenzoate demonstrated favourable affinity with low binding energy to the TNF-α (-6.8Kcal/mole) & FGF (-7.0 Kcal/mole) targets. Ermanin displayed moderate affinity to both the TNF-α & FGF & maximal affinity to TGF-β target. Based on these studies. it can be concluded that these identified phytomolecules can serve as leads for further structural modification for the design of newer molecules that will act on the multiple targets in the wound healing process.

Keywords: Docking studies, Phytomolecules, Shape & structure-based similarity studies, TNF-α, TGF-β, FGF, Wound management.

PT/ST3/0024

Standardization of an herbomineral Amrutmanjiri rasa and estimation of piperine and eugenol using HPTLC

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Abstract: The Indian medicinal system has placed great faith in Ayurveda to treat disease. A traditional composition Amrutmanjiri rasa is used to treat dengue fever. This traditional preparation needs to be standardized. In the present study, Amrutmanjiri rasa was standardized by using HPTLC with piperine and eugenol as standard. Samples were chromatographed on silica gel 60 F254 TLC plate, using N hexane: ethyl acetate: Glacial Acetic Acid (6:4:0.2) for Piperine and toluene: methanol (9.5: 0.5) for eugenol as mobile phase. Quantification was done by densitometric analysis at 335nm and 280nm with Rf values of 0.63 and 0.71 for piperine and eugenol, respectively. HPTLC method was validated for linearity, Limit of Detection (LOD), Limit of Quantitation (LOQ), precision, %recovery, and robustness as per ICH guidelines. These methods were found to be linear in the concentration range of 500 to 3000 ng/band for piperine and 1000 to 6000 ng/ band for eugenol and the correlation coefficient r2 =0.996 and r2 =0.998 respectively. Statistical analysis of the data showed that the results are within the limits (%RSD & SD ≤ 2). The HPTLC method is validated and successfully employed for the standardization of Amrutmanjiri rasa.

Keywords: HPTLC, Herbomineral formulation, Amrutmanjiri Rasa, Piperine, Eugenol, Method validation.

PT/ST3/0025

HPTLC Bioautographic assay for evaluation of free radical scavenging activity of S.cumini and C.dactylon in Polyherbal formulations.

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Abstract: HPTLC-Bioautography, an analytical tool can evaluate the antioxidant, anti-diabetic, antibacterial, antimicrobial, and other activities of botanicals. An agar-free bioautographic method was developed and validated for the assessment of free radical scavengers on TLC plates. This study sought to determine whether this tried-and-true technique could be applied to standardize the evaluation of therapeutic activity of bioactive substances. To separate, locate, and detect bioactive components in plant extract, the bioautographic assay was combined with TLC separation. 2, 2-diphenyl-1-picrylhydrazyl (DPPH) was used to assess the antioxidant activity of S.cumini and C.dactylon in polyherbal formulations and ascorbic acid and gallic acid were the biomarkers used for the study. The proposed HPTLC method will be helpful for evaluating antioxidant activity in polyherbal formulations. The suggested procedure is rapid, easy, precise, and repeatable for finding and assessing candidate free radical scavengers.

Keywords- bioautography, C.dactylon, free radical scavenging activity, HPTLC, S.cumini.

PT/ST3/0026

Quantification of Bacoside A in brain homogenate by using High-performance liquid chromatography

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Abstract: Alzheimer's disease (AD) is one of the most well-known neurodegenerative disorders that impair memory and cognitive abilities. Acetylcholine is the neurotransmitter responsible for cholinergic dysfunction and cognitive deficits in disease patients. The majority of FDA-approved synthetic or natural drugs act as partial inhibitors rather than cures. Herbal remedies are an alternative therapeutic option for many patients with mental health issues, but due to their higher molecular weight and limited solubility, absorption is low so they are unable to cross lipid membranes and have poor absorption resulting in loss of bioavailability and efficacy. Bacoside A is one of the potential candidate extensively explored to treat neurodegenerative disorders. Hence, an attempt was made to develop a nano-based formulation of Bacopa monnieri and the concentration of bacoside A was compared with a conventional formulation. The concentration was determined using the HPLC method. The results indicated that the concentration of bacoside A in nano-formulation was greater than the extract in the brain homogenate of the rats.

Keywords: Bacoside A, HPLC, Alzheimer's disease, nano-formulation.

PT/ST3/0027

Study of seed oils for treatment of hyperpigmentation

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Abstract: Hyperpigmentation is a growing problem among Indians, and finding a successful cure can be difficult. Botanical extracts are the choice for a majority of population for the treatment of hyperpigmentation. Polyphenols are reported to be safe and effective in inhibiting melanogenesis. Seed oils composed of polyphenols and unsaturated fatty acids can inhibit the tyrosinase enzyme responsible for initiation of melanogenesis. The seed oils namely grape seed oil (GSO), papaya seed oil (PSO), carrot seed oil (CSO) were evaluated for their total phenolic and flavonoid content, quantification of oleic acid by HPTLC, in-vitro antioxidant activity was done using DPPH assay and anti-tyrosinase activity was done using Mushroom tyrosinase inhibition assay.Total phenolic content for PSO 0.0936 mg/gm Gallic acid equivalent (GAE) was highest when compared to GSO and CSO while CSO had a higher total flavonoid concentration, 0.0945 mg/gm as quercetin equivalent (QE). Oleic acid methyl ester was estimated in all oils using HPTLC using standard oleic acid. Free radical scavenging activity was comparable to standard and tyrosinase inhibitory activity (IC 50) for grape and carrot seed oils was 80.10 ± 0.007 µg /ml and 76.52 ± 0.006 µg /ml at 100µg/ml, respectively. The results obtained suggest that it has a great potential as depigmenting agent when appropriately formulated and used for skin care and skin glow.

Keywords: Anti-tyrosinase activity, Hyperpigmentation, Mushroom tyrosinase inhibition assay,

PT/ST3/0028

LC-MS Profiling of Piper betle var Magahi "Magahi Pan" Major Phytoconstituents with Computational Identification of Potent Ligands for Gastric HK-ATPase enzyme.

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Abstract: Piper betle var Magahi is commonly known as Magahi Pan and is considered the best among all cultivars of betle vine, due to its less fibrous nature & sweet taste. It exhibits numerous medicinal activities and is most commonly used to treat gastrointestinal problems by local people.The purpose of the present research work is to characterise the phyto-constituents of Piper betle var Magahi through LCMS, followed by an in silico study, selecting potent ligands for gastric HK-ATPase enzyme.Phytochemical characterization was done with the help of LC-MS/ ESI (Model Agilent 6540LC/Q-TOF) and followed by in silico study against enzyme HK-ATPase using computational programming Autodock4.2 & with web tool SwissADME(http://www.swissadme.ch/). A total of 67 compounds were identified through LCMS & finally, six compounds were selected on the basis of binding energy and Ki value. Binding affinity & Free energes between lead compounds and the main enzyme HK-ATPase, recommends only six compounds namely Netilmicin with Binding Energy -9.29Kcal & Ki value 156.18nM, Benzotropine with Binding Energy-9.07Kcal & Ki value 225.99nM, 5,6,7,3',4' Pentahydroxylsoflavone with Binding Energy -8.45Kcal/mol & Ki value 635.89nM, 2-O-Acetylpseudolycorine with Binding Energy -8.02kcal/mol & Ki value 1.32µM, Luteolin with Binding Energy -6.93Kcal/mol & Ki value 8.34µM and R-95913 with Binding Energy -7.73Kcal/mol & ki value 2.17µM were reported respectively. The binding affinity, free energy, and ADME were assessed because of the competence of molecules and their strength to reach the target site, in bioactive form. Two molecules, namely 5, 6, 7, 3', 4', Pentahydroxylsoflavone and Luteolin, were finally selected for in vivo study.

Keywords: Liquid chromatography mass spectroscopy, Hydrogen Potassium-ATPase enzyme

PT/ST3/0029

GABAA Receptor Modulators and Ferulic Acid Esters from Withania somnifera

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Abstract: Withania somnifera (L.) Dunal, also known as "Ashwagandha" or Indian ginseng, has apoptogenic properties known since ancient times. It is a green shrub belonging to the family Solanaceae. In order to identify the active constituents responsible for its GABAA mediated activity we obtained methanolic extract of the W. somnifera. A bioassay guided approach was used to detect the active fractions. We have isolated 9 compounds from the most active fractions of the methanolic extract. This includes two new withanolides reported for the first time, to which we name withasomniferolides A and B, three known withanolides, a ferulic acid dimeric ester, and an inseparable mixture of three long alkyl chain ferulic acid esters. NMR, MS, and ECD data analysis was used to elucidate the structures of the isolated compounds. Further synthesis of ferulic acid esters was done to demonstrate the SAR and study the bioassay. Docosanyl ferulate, a ferulic acid derivative was found to be most active compound. It was able to enhance the GABAA receptor inhibitory postsynaptic currents with an IC50 value of 7.9 µM. These results cast fresh light on the biological activities of the secondary metabolites of W. somnifera roots, by showing an ability to modulate the GABAA receptor function.

Keywords: Withania somnifera, withanolides, Ferulic acid esters, GABAA receptor

PT/ST3/0030

Phytochemical and Biological Screening of Tectona grandis Bark Extract

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Abstract: Tectona grandis Linn. (Teak) is one of the most valuable timber plants in the world, which is native to South and Southeast Asia and is renowned for its dimensional stability, extreme durability and hardness. This is due to its beautiful surface and its resistance to termite even when unprotected by paints and preservatives. The present study aims to assess the preliminary phytochemical screening, anti-termite, antioxidant activity, anti-inflammatory activity, antimitotic activity and anti-cancer activity of the chloroform and methanolic extract of the Tectona grandis bark. To the extracts preliminary phytochemical screening was performed initially followed by estimation of anti-termite in vitro anti-oxidant activity by using DPPH measuring the absorbance. The in vitro anti-inflammatory activity consisted of assaying the effect of the extracts against denaturation of protein (egg albumin) and measuring the absorbance. Antimitotic activity of the extract was determined by green gram seed phytotoxicity assay, cytotoxicity by brine shrimp nauplii lethality assay and anti-cancer activity was carried out on U87MG and MCF-7 cell lines using MTT Assay. The plant extracts revealed the presence of polyphenols, alkaloids, flavonoids, cardiac glycosides, steriods, tannins and terpenoids. The anti-termite activity and in vitro anti-oxidant activity of chloroform extract have shown more potent activity at even lowest concentration when compared to methanolic extract. The in vitro anti-inflammatory activity of chloroform extract of Tectona grandis bark demonstrated that at 150 µg/ml concentration a better activity was exhibited which is greater than that of methanolic extract. The in vitro antimitotic and cytotoxicity studies have shown very good activity in chloroform extract when compared to methanolic extract. The in vitro anti-cancer activity based on the morphological analysis revealed chloroform extract and methanolic extract against two cell lines U87MG and MCF-7 has shown a potent anti-cancer activity at both the concentrations tested (100 & 150 µg/ml) and methanolic extract at 150 µg/ml concentration have not shown any cytotoxic activity against the two cell lines tested. The chloroform extract have shown potent in vitro antioxidant, anti-inflammatory, antimitotic, cytotoxic and anti-cancer activities. It may be due to presence of phytochemicals like polyphenols, alkaloids, flavonoids and terpenoids.

Keywords: Tectona grandis, phytochemicals, anti-termite, antioxidant activity, anti-inflammatory activity, antimitotic activity, anti-cancer activity, DPPH, MTT Assay

PT/ST3/0031

Standardization And Evaluation of Polyherbal Syrup Containing *Aconitum Hetrophyllum* and *Caesalpinia Bonducella* For Its Antimicrobial Activity

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Abstract: These formulation of polyherbal syrup was directed to evaluate *in vitro* antimicrobial activity against microorganism involved in gastrointestinal infection. Antimicrobial activity was evaluated against gram positive and gram-negative bacteria by agar well diffusion method. By studying standardization and evaluation of these formulation, it's observed that antimicrobial syrup inhibits the growth of microorganisms. An overview covering different techniques involved standardization and evaluation of crude drug. Now a days there is no any antimicrobial herbal preparation in the market. There are various company's ayurvedic preparation are available in the market like Sharangdhar, Himalaya, Baidyanath, Zandu, Sandu, Prakruti, Santulan etc. but there is no one preparation is antimicrobial preparation against gastrointestinal infection. So current study was for preparation of antimicrobial polyherbal syrup which is mostly useful for gastrointestinal tract infection. This preparation is prepared by using the herbs *Aconitum hetrophyllum* and *Caesalpinia bonducella* which gives antimicrobial activity against the microbes which causes gastrointestinal infection by contaminated food, water, fluid, fingers consumption, causing diseases like typhoid, paratyphoid fever, and listeriosis and some forms of viral hepattis. An overview covering different techniques involved standardization and evaluation of crude drug

Keywords: *Polyherbal syrup Formulation, Antimicrobial activity, gastrointestinal infection.*

PT/ST3/0032

Development and Validation of RP-HPLC method for the Estimation of Vitexin in *Convolvulus arvensis* and *Neurada procumbens*

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Abstract: Vitexin is an apigenin flavone glycoside (5, 7, 4-trihydroxyflavone-8-glucoside) has gained a growing attention due to its wide ranges of biological activities including antioxidant, anticancer, spasmolytic, antithyroid, cardioprotective, neuroprotective, antinociceptive and antiviral activities. It is a C-glycosylflavonoid found in a number of plants such as passion flower, bamboo leaves, chaste tree, hawthorn and pigeon pea which may also be used as marker for the standardization of plant extracts. In the present investigation, it was estimated in the extracts of *Convolvulus arvensis* and *Neurada procumbens* by reversed phase high-performance liquid chromatography (RP-HPLC). C18 column was used as a stationary phase and methanol-0.05 % o-phosphoric acid in the ratio of 20:80 was used to separate the compounds from the extracts by isocratic program. Vitexin was detected at 340 nm by a UV-Visible detector, which showed a sharp peak with the retention time of 6.692 minutes. The quantitative study revealed that 0.727 mg/g of vitexin found in the extract of *Convolvulus arvensis* and 0.0372 mg/g of vitexin found in the extract of *Neurada procumbens*. The linearity range was found to be between 100 ng to 200 µg/ml with the correlation coefficient of $r^2 \geq 0.9994$. The limit of detection and limit of quantification of vitexin were found to be 30 and 100 ng/ml. The developed method is simple, precise and accurate for the quantification of vitexin in the extracts and might be helpful in the quality control of these plants.

Key words: *C-glycosylflavonoid; extract; flavonoid; quantitation; validation*

PT/ST3/0033

HERBAL DRUGS FOR RHEUMATOID ARTHRITIS – A REVIEW

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Abstract: Rheumatoid arthritis is an inflammatory disorder affecting almost 1-3% of the world population. The word Arthritis means inflammation in joints ("artho" means the joint and "it is "meaning inflammation of joints). Inflammation in the joints casuing pain, swelling and damage to the joints and also leads to abnormality. Arthrits also affects small joints in hands and feets, knees, wrists, elbows and ankles. Now a days most of the steroid drugs will agreed to the RA. It leads to the further side effects. As the drugs like (predisone, prednisolone, hydrocortisone, dexamethasone, methylprednisolone, betamethasone, triamcinolone). By using of these drugs there has a more side effects like weight gain, increased blood glucose level, high blood pressure, depression, anxiety, leg swelling, insomnia, skin irritation etc., So the most society decide to consumption the herbal drugs for RA. Herbal medicine affords a foundation for various traditional medicine systems worldwide. Today, these herbs contribute approximately 25% is derived for chemically altered natural products. More than 2000 plants of medicinal value are declared in Indian ancient Ayurvedic, Unani, and Tibbi systems of medicine. We have also carried out a number of studies on possible intervention of herbal preparation with diabetic and arthritic conditions in experimental animals. Ginger (*Zingiber officinalis*) has been used for anti-inflammatory agent in Indian ayurvedic system of medicine. Another constituent of ginger is gingerol. *Trewia polycarpa Benth* (Euphorbiaceae) roots are also used in Indian ayurdevic medicine for the treatment of rheumatism, arthritis, gastritis. Indian species viz. *Trewia nudiflora* Linn are common.

Key words: *Herbal, Anti Inflammatory agent, Gingerol, Terpenoids, Alkaloids.*

PT/ST3/0034

A MOLECULAGULCODAISE ENZYMEAR DOCKING APPROACH OF POLYHERBAL FORMULATION MADHUMEGA KUDINEER CHOORANAM AGAINST ALPH

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Abstract: Diabetes is a clinical condition characterized by the frequent and excessive passage of urine with 'sweetness' eventually leading to the deterioration of body constituents. Madhumega kudineer chooranam a polyherbal preparation, which contains seven herbal powders, is highly used as traditional medicine for diabetes prevalence has been rising more rapidly in middle- and low-income countries. By reviewing the importance of polyherbal formulation of madhumega kudineer chooranam through literature review, there is an urgent need to study its diversity and develop effective measures against diabetes Mellitus Type II. The aim of the present study was to identify the phytochemical constituents, which are present in madhumega kudineer chooranam responsible for the treatment of diabetes. In the initial step, we conform the presence of high potential phytochemical constituents to treat diabetes, such as marmalosin, andrographolide myricetin, mangiferin, Azadiratin, Vasicine, and Gymnemic. In the second step, we have docked the potential phytochemical constituents against alpha glucosidase. In the results, the highest docking score was shown by vasicine (- 6.211) followed by myricetin (-5.613) and so on. We conclude that vasicine shows the highest inhibition against alpha gulcodaise, It is very much effective against diabeties Mellitus II.

Key words: Diabetes,Madhumega kudineer chooranam,alpha gulcodaise

PT/ST3/0036

A Review on Catharanthus Roseus Plant Herb For Anti Diabetic Activity

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Abstract : Catharanthus roseus is a famous herb in Ayurveda. It is known for its anti-inflammatory, anti-diabetic, anti-microbial, anti-mutagenic and anti-oxidant effects. The evergreen plant indigenous to island of Madagascar. Diabetes is the second most common disease in the world, and there is a need to develop safe and economical herbal products. Chronic diseases require long-term treatment and therefore suffer from the side effects of skipping doses to avoid the need to develop herbal products that show antidiabetic activity, of natural products like Cassia auriculata, Cinnamomum zeylanicum, Catharanthus roseus etc., The plant is native to India in Tamil Nadu, Karnataka, Andhra Pradesh, Assam, Gujarat and Madhya Pradesh. Catharanthus flower leaf juice or water extract is used as folk medicine to treat diabetes all over the world. In the present study, the hypoglycemic activity of Catharanthus roseus leaf juice was evaluated for normal and alloxan diabetic rabbits. The blood glucose lowering activity of leaf juice was studied in normal and alloxan induced (100mg/kg i.v) diabetic rabbits followed by Nelson-Somogy's method by visible spectrophotometer and the data was compared statistically using student's t-test. The present study clearly indicated a significant anti-diabetic activity with the leaf juice of Catharanthus roseus and supports the traditional usage of fresh leaves for the control of diabetics. .

Key words: *Catharanthus Roseus, Anti Diabetic activity, Nelson Somogy's method,*

PT/ST3/0037

Phyllanthus emblica (Indian gooseberry) and *Santalum album* (Indian sandalwood) as Herbal Medicine: Traditional knowledge, Phytochemistry and Pharmacological aspects

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Abstract: Ayurveda is the oldest health system in the world, have many medicinal plants which are nature's gift to humans to promote a disease free healthy life. *Phyllanthus emblica* is extensively used as a rejuvenator in Ayurveda. Pharmacological studies have shown that *Phyllanthus emblica* possesses antipyretic, analgesic, antitussive, antiatherogenic, adaptogenic, cardioprotective, gastroprotective, antianemia, anti-hypercholesterolemia, wound healing, antidiarrheal, hepatoprotective, nephroprotective, and neuroprotective properties. In addition amla and some of its phytochemicals like gallic acid, ellagic acid, pyrogallol, norsesquiterpenoids etc. possess antineoplastic effects and reported to possess radiomodulatory, chemomodulatory, chemopreventive effects, free radical scavenging, antioxidant, antimutagenic and immunomodulatory properties that are efficacious in the treatment and prevention of cancer. *Santalum album* is famous for its essential oil, derived from sandal heartwood have been used in traditional systems of medicine for the treatment and prevention of wide range of ailments. Sandalwood oil was popularly used in medicine up to 1920-1930, as a urogenital (internal) and skin (external) antiseptic. It has antimicrobial, antipyretic, antiseptic, antifungal anti-inflammatory, anti-phogistic, antispasmodic, astringent, cicatrisant, carminative, bronchitis, sore throat etc. properties. Herbal medication is common among older Indians, particularly those with chronic medical condition and those who are very frequent users of formal health care services. We intend to briefly discuss in this chapter traditional knowledge, phytochemistry and pharmacological aspects of *Phyllanthus emblica, Santalum album* plants.

Keywords: *Phyllanthus emblica, Santalum album, chemopreventive, antiphogistic, cicatrisant*

PT/ST3/0046

Evaluation of phytochemicals present in red rice extract (navara grains) and their use in topical formulation.

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Abstract: Rice (Oryza sativa) has been used for a number of applications from ancient times, including the incorporation of foods, cosmetics, and pharmaceutical items. Red rice is becoming widely recognised for its nutritional and therapeutic significance, with the coloured rice variety showing potential as enzyme inhibitors due to the presence of polyphenols and proanthocyanidin content, in addition to the nutritional value. The primary goal of this work was to perform extraction of red rice rice grains using methanol: water system and an Ultrasonic probe method to obtain red rice extract. The phenolics (198.93 ± 66.20 mg GAE /100 g of RRE), flavanoid (176.72 ± 44.45 mg rutin trihydrate/100g RRE), and anthocyanin content (98.52 ± 32.82 µg Cyanidin-3-glucoside /100 g) were also estimated. The antioxidant impact (96.19 ± 32.11 %) of red rice extract and its topical preparation, as well as Collagenase inhibitory action, were investigated. With 20% RRE, substantial collagenase inhibitory activity (21.13%) was reported. The extract was created as an emulgel with 10 and 20% RRE, Carbopol 934, and oils such as almond oil and rosemary oil. The oils served as an emollient and a preservative, respectively.

Keywords: *Red rice, Polyphenols,Topical, Emulgel*

PT/ST3/0049

ISOLATION AND IDENTIFICATION OF LACTOBACILLUS SPECIES FROM MILK AND ITS APPLICATION IN PROBIOTIC CANDY

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Abstract: Lactic acid micro organism (LAB) as defensive cultures are not unusual place probiotic organisms which are taken into consideration secure due to their unique characteristics. The most important genera of LAB are Leuconostoc, Enterococcus, Lactobacillus, Lactococcus, Bifidobacterium, Pediococcus, and Streptococcus. These boom useful microorganisms' boom and scales down pathogens' populace mechanisms to motive discount of gastrointestinal diseases. LAB are broadly dispersed withinside the surroundings that can fend off the boom of pathogenic microorganisms through generating unique substances. Current research proposed that lactic acid micro organism own anti-weight problems and anti-diabetic propensities on their hosts and for that reason can play a pivotal position in human fitness care. More research which verify the direct consequences of probiotic LABs in reducing the unfold of food-borne and different pathogens are additionally predicted. Probiotics aren't novel. Its crux is associated with the mankind due to the fact that they started ingesting fermented foods. Probiotic is described as 'stay microorganisms which upon ingestion in positive numbers exert fitness advantages past inherent general nutrition'. Probiotic microorganisms are in large part of human and animal origin. They are ordinary population in their gastrointestinal tract and specifically remoted from their faeces. The probiotic sweets could be useful in introduction of oral pathogens, at the same time as selling excellent micro organism boom and for that reason growing the salivary manufacturing of IgA antibody.

Keywords: *Probiotics, lactobacillus, lactic acid, IgA antibody.*

PT/ST3/0053

BIOLOGICAL POTENTIALITIES OF VACCINIUM MYRTILLUS FOR ITS IMMUNOMODULATORS AND ANTIOXIDANT ACTIVITY ON VARIOUS PARTS OF THE PLANT SHOWN IN MICE

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Abstract: Vaccinium Myrtillus (bilberry) is a member of the Ericaceae family and is known as European blueberry, in vitro and in vivo studies can show the antitumor activity of anthocyanins from bilberry by its inhibition of cell growth and its antiproliferative and antiangiogenic activities. The results of preclinical studies can show both in vivo and in vitro fully confirm the expected clinical efficacy. Although bilberry constituents have multiple Pharmacological actions most the research has been focused on the Anthocyanoside, also have been shown to possess strong antioxidant properties like stabilize collagen fibers and promote collagen biosynthesis decrease capillary permeability and friability and inhibit platelet aggregation. The main objective is the physiochemical composition, the antioxidant and the hypoglycemic activity of the spray dried extracts of bilberry be determined. The method of extraction of Vaccinium Myrtillus is extracted with water/ethanol mixtures. The preparation of extract consists of 100gm of crude drug with 200ml of solvent like ethanol which stored at room temperature and double filtration is done and extract is formed. This extract scavenged superoxide anion in the hypoxanthine-xanthine oxidase system and inhibited CCH-NADPH stimulated lipid per oxidation in microsomes. The further Research regarding Vaccinium Myrtillus can improve the quality of medicinal sciences and this research can lead to growth in pharmaceutical industry.

Keywords: Bilberry, European Blueberry, Antioxidant, Immunomodulation

PT/ST3/0054

CURRENT DEVELOPMENTS IN RNA BASED THERAPEUTICS

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Abstract: The rise in the interest for RNA based therapeutics is a novel approach within the biotech field for finding treatments and preventive measures for various conditions which hasn't been addressed by traditional small molecule drugs. The fact that only about 10-15% of all the proteins produced in our body has active binding sites on them is directly attributable in making this kind of approach a necessity. The foundation of the concept of mRNA as a therapeutic agent was given in 1992 when a team of scientists working at Scripps Research Institute used mRNA to transiently reverse diabetes insipidus in Brattleboro rats, discovery of new types of RNA that had no role in coding such as siRNA & miRNA however, RNA is not an easy molecule to work with as it is inherently unstable, can trigger an unwanted immune response & it has to be transported across a negatively charged membrane. The aim of this study is to accentuate recent developments that have taken place in this area which have produced new opportunities as well as new challenges. This piece of work will throw light on the new thrust areas which are emerging in this field such as nucleic acid synthesis, usage of delivery vectors, next gen sequencing, synthetic RNA production & CRISPR Cas9 to bring the cost of treatment down and make it accessible to all.

Keywords: *Nucleic Acids, non-coding RNA, next gen sequencing*

PT/ST3/0055

Comparative studies on extraction and phytochemical investigation of the *Balanites aegyptiaca* seeds oil using microwave and conventional method

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Abstract: *Balanites aegyptica* is traditionally important spiny shrub used for various ailments and also report for various activity such as asthma, anthelmintics, dysentery, antibacterial, analgesic, hepatoprotective, anticancer, anti-inflammatory, antioxidant, constipation, infection, wounds healing and epilepsy. In the present work the seed oil of *Balanites aegyptica* was extracted using conventional soxhlet and Clevenger apparatus and compared with the microwave assisted extraction. The standard procedure were adopted for evaluation of the parameters such as moisture content, specific density, refractive index, acid value ,sponification value and compared in both the methods. The result reveals the significant increase in the oil extract using microwave assisted extraction by 6%. The physiochemical investigation in conventional and microwave assisted synthesis was significantly same indicating the extraction of same constituents and no degradation of the constituent using microwave assisted method.

Keywords: *Balanites aegyptica, Extraction, Microwave assisted extraction, soxhlet extraction, microwave and conventional method*

PT/ST3/0056

A review on Gymnema sylvestre: A Potential Herb

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Abstract: *Gymnema sylvestre* (Asclepiadaceae) is a herb with golden potential. Since ancient times, it has been used as an anti-diabetic, antioxidant, antimicrobial, anticancer, and antihyperlipidemic. Common name is 'gurmar,' which indicates 'destroyer of the sweet taste. It balances the blood sugar level. The present review discusses the *Gymnema sylvestre*, its description, uses, and constituents. The study also includes a brief description of patents and marketed formulations related to *Gymnema sylvestre.*Various databases, i.e., google scholar, PubMed, research gate, etc., were searched to collect data. Several sites were retrieved to gather helpful information. Information regarding marketed formulations was collected.Various properties of the plant were revealed. Information regarding various patents and marketed formulations was compiled. Collected pieces of information and studies were assembled in the present review.*Gymnema sylvestre* is a proven potential herb for its properties like anti-diabetic, antioxidants, anticancer, etc.

Key words: *gymnema, gurmar, anti- diabetic, anti-oxidant*

PT/ST3/0057

HPLC Analysis of methanolic extract of Ricinus communis root using Quercetin, Catechin and Gallic acid along with pharmacognostic studies

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Abstract: Ricinus communis, also known as castor oil plant belongs to the family Euphorbiaceae. It is widespread in India and South Africa. Ricinus communis plant has numerous medicinal benefits and is used to treat muscle aches, arthritis, gallbladder pain, constipation, backache, abdominal disorders. Many phytoconstituents has been isolated from Ricinus communis root like glycosides, carbohydrates, saponins, tannins, flavonoids. In this study, an approach has been done to standardize Ricinus communis root using morphological and microscopical characteristics, physical and chemical parameters including phytochemical screening, ash value, extractive value, moisture content, phenolic content, flavonoid content, TLC and HPLC analysis. The roots of Ricinus communis was extracted with different solvents like chloroform, methanol and ethyl acetate. Various extracts of Ricinus communis root were subjected for TLC analysis with standards of Catechin, Quercetin and Gallic acid. TLC results showed the presence of catechin, quercetin and gallic acid in alcoholic extract of roots of Ricinus communis. An HPLC study was carried out for methanolic extract of Ricinus communis root with standards of Quercetin, Catechin and Gallic acid. Thus, these standardization methods can be used for authentication of Ricinus communis plant.

Keywords: Ricinus communis root, Phytochemical screening, TLC study, HPLC analysis.

PT/ST3/0058

SYNTHETIC DNA

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ABSTRACT: The synthesis of synthetic DNA is often referred to generically as “gene synthesis” , gene length pieces of DNA (250 – 2000 bp) directly from single – standard synthetic DNA oligonucleotides . synthetic DNA is used for research in areas where using active DNA is possible or not preferred. synthetic DNA constructs are designed and manipulated using computer- aided design software it can broke up into overlapping single – standard oligonucleotide. The synthesis of synthetic DNA is often referred to generically as gene synthesis the gene length pieces of DNA. Synthetic DNA constructs are designed are manipulated using computer - aided design software. the designed DNA is then divided into synthesizable pieces up to 1 – 1.5 kbp. it is useful distances and metrics. this is known as synthetic DNA.

KEY WORDS: *Synthetic DNA, gene synthesis, oligonucleotides, computer – aided design, overlapping*

PT/ST3/0061

Bioactivity-Guided Isolation of Potential Anti-Asthmatic Compounds from *Calotropis Procera* Flower

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Abstract: Asthma is a chronic inflammatory disorder of the human respiratory system in which the airways constrict and become narrow, often in response to a "trigger" such as exposure to an allergen, cold air, exercise, or emotional stress. *Calotropis procera* (Asclepiadaceae) is a medicinal plant used traditionally for the treatment of asthma. In the present study, the scientific evidence based anti-asthmatic compound was isolated from flowers *C. procera.* There is no scientific evidence for the anti-asthmatic activity of *C. procera* and no data available for the anti-asthmatic chemical constituent of *C.procera* flowers. Successive extraction of *Calotropis procera* flowers powder has been carried out and activity of each crude extract is observed on milk induced leukocytosis and eosinophilia in albino mice, bronchodilation and The broncoprotective study using Guinea pigs and Mast cell stabilization activity using rats and Rutin were isolated and subjected to phytochemical analysis in addition to spectral study viz IR, NMR and MS. The ethyl acetate fraction was determined to be mainly composed by 2-(3,4-dihydroxyphenyl)-5,7-dihydroxy-3-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[[(2R,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyloxan-2-yl]oxymethyl oxan-2yl]oxychromen-4-one.(Rutin). These results suggested that *C.Procera* is a potential natural ingredient for the treatment of anti-asthmatic activity, which is due to bioactive compounds.

Keywords: *Anti-asthmatic, Rutin, Milk induced leukocytosis and eosinophilia.*

PT/ST3/0062

Antimicrobial efficacy and mechanistic evaluation of *A. paniculata* Leaf Extract against New Delhi Metallo- β-Lactamase-1 (NDM-1) producing Bacteria

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Abstract: The prevalence of multidrug-resistant bacteria had turned out to be a matter of great public health concern internationally involving India. Emerging multidrug resistance in enterobacteriaceae especially Carbapenem resistance is of the utmost importance for clinical therapy. A bacterium carrying the NDM-1 (New Delhi Metallo-β-Lactamase) gene is considered a very powerful superbug, which is widespread in India. CDC also reported it as an urgent threat. In this study, various extracts of *A. paniculata* leaves was screened for antibacterial activity against NDM-1 producing bacterial strains. The extracts that showed antibacterial activity were then tested for minimum inhibitory concentrations (MICs) and zones of inhibition. The MIC value of acetonitrile, methanol and ethanol extract of *A. paniculata* against *E. coli* (ATCC resistant strain) was found to be 2750 µg/ml, 1500 µg/ml and 2500 µg/ml, respectively. And against *K. pneumoniae* (ATCC resistant strain) was found to be 3000 µg/ml, 1750 µg/ml and 2750 µg/ml. The methanolic extract showed more zone of inhibition as compared to acetonitrile and ethanol extract. The mechanistic evaluation also showed that the methanolic extract (3000 µg) of the leaves inhibited efflux pump of *E. coli* cells by 80.47% and that of *K. pneumoniae* cells by 82.52%. Similarly it also showed the inhibition of cytoplasmic membrane permeability efflux for both the resistant strains. Thus the ability of the crude extracts to inhibit the growth of such resistant pathogenic bacterial strains used in this study is an indication that the *A. paniculata* leaves extract has the potential and can be used as a source for new broad spectrum antibiotics.

Keywords: *Multidrug-resistance, NDM-1, Antibacterial activity, A. paniculata.*

PT/ST3/0065

Genome mining approaches to access novel secondary metabolites; the topic of current trends

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Abstract: Microorganisms are outstanding producers of secondary metabolites. These secondary metabolites are also known as bioactive compounds or naturally derived compounds. These naturally derived components having a clinical significance to treat various diseases, so accessing these components became a topic of current trends. In addition, combining both genome sequencing and genome mining workflows brings extra confidence to discover drugs with new excellent clinical significance. However, connecting these discovered genes to their associated naturally derived components quickly and effectively remains a significant challenge. In this review, we are discussing the relevance of genome mining approaches for discovering novel naturally derived components and the benefits and drawbacks of these approaches. We offer particular instances of investigations that have employed genomic and metagenomic data to solve present challenges. In addition, we also discuss in detailed the genome mining approaches role in drug discovery.

Keywords: *Genome mining, metagenomics, biosynthetic gene clusters (BGCs), naturally derived components, phylogenetic approach, drug discovery.*

PT/ST3/0066

Heterogenous approach: Stimulating Biosynthetic gene clusters using multiple level regulatory transcriptional factors

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Abstract: Microorganisms such as fungi and bacteria are prosperous producers of secondary metabolites; moreover, they are home to a large number of silent/mute biosynthetic gene clusters, but they are all poorly expressed. Thus, these resultants compounds remain cryptic or unknown. However, since these cluster products have many bioactivities, stimulating their production and gaining access to their related structures are considered a top priority. In this review we are going to discuss about heterogeneous and refactoring cluster expression are one of the strategies utilized to unlock the expression of biosynthetic gene clusters (BGCs). In fungi and bacteria, secondary metabolism is closely controlled; moreover, BGCs secondary metabolite productions are subject to multiple level regulatory transcriptional factors. Among BGC clusters, each cluster has its unique regulators; further, these control the direct expression of clusters. Independent cluster regulators are also found widely in fungi and bacteria, and they usually control the expression of several BGCs. In fungi and bacteria, removing transcriptional repressors, or transcriptional activators overexpressing, are one of the widely utilizing strategies for increasing secondary metabolites production. Nonetheless, the expressions of BGC that govern the regulatory hierarchies are complex; anyway, these strategies are not entirely removed from the latest research.

Keywords: *Heterogeneous cluster expression, transcriptional factors, transcriptional activators, transcriptional repressors*

PT/ST3/0067

CRISPR/Cas9 approach: For Identifying and stimulating the biosynthetic gene clusters in microbes

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Abstract: Microorganisms are great producers of secondary metabolites and it is not essential for their growth and development. However, microorganism using their secondary metabolites in different ways, such as communication devices or chemical weapons. These secondary metabolites play a significant role in human medical health. So, accessing these secondary metabolites considered as a top priority. Secondary metabolites are regulated by biosynthesis gene clusters, which are not normally expressed under laboratory conditions. So, most of the biosynthetic gene clusters remain cryptic. Genetic engineering is being used as a vital method to enhance the stimulation of Biosynthetic gene clusters. CRISPR/Cas9 is used to modify, delete, or correct precise regions of DNA. In this review, we are going to discuss the CRISPR/Cas9 technology used to identify and stimulate cryptic biosynthetic gene clusters to enhance the production of secondary metabolites.

Keywords: *Secondary metabolites, Biosynthetic gene clusters, CRISPR/cas9, genome editing*

PT/ST3/0068

IN-VITRO EVALUATION OF ANTIOXIDANT AND ANTIDIABETIC POTENTIAL OF *D. FALCATA* AND *D. STRICTUS* EXTRACTS.

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Abstract: Medicinal plants have always been the principal sources of medicine worldwide. India sustains a very rich traditional medicinal plant wealth and inherits unique plant and animal communities. Free radicals are implicated in many diseases like diabetes, inflammation, cancer, which leads to gained more attraction of antioxidant therapy. Diabetes is a metabolic disorder which results due to deficiency in insulin and its metabolism. At present, the prevalence of Diabetes has increased worldwide and predicted to increase to greater extent in future generations. Among various therapeutic approaches implemented to prevent diabetes is to regulate the blood glucose levels by various mechanisms. Present study enumerates the *In-Vitro* Evaluation of Antioxidant and Antidiabetic Potential of *D. Falcata* and *D. Strictus* Extracts. Phytochemical screening showed the presence of alkaloids, glycosides, carbohydrates, steroids and flavonoids in both the extracts. Physical parameters like solubility, MP, ash values, LOD, extractive value etc. has been studied. The antioxidant activity of the extract was done by using DPPH and H_2O_2 method. This is being assessed by assay such as inhibition of α-amylase enzyme suppresses the level of production of glucose. Our results suggested that *D. falcata* and *D. strictus* extracts showed potential *In-Vitro* antioxidant and anti-diabetic activity which indicates that this extract can be taken further for pharmacological study.

KEYWORDS: *D. Falcata, D. strictus, Physicochemical parameter, Antioxidant effect, Anti-diabetic activity, α-amylase enzyme.*

PT/ST3/0069

IN-VITRO ASSESMENT OF ANTIOXIDANT POTENTIAL OF DIFFERENT EXTRACTS OF SAUSSUREA LAPPA

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Abstract: Antioxidants play vital role in preventing and protecting from oxidative stress and ultimately from diseases caused by oxidative stress like Alzheimer's disease, cancer etc. The present study aimed at evaluation of the antioxidant activity of four different extracts namely hexane, ethanolic, chloroform and n-butanol of Saussurea lappa by antioxidant capacity assays such as DPPH (1, 1- diphenyl-2-picrylhydrazyl radical), Nitric oxide and H_2O_2 scavenging method. All four extracts show good antioxidant activity ethanolic extract having more superior antioxidant activity close to that of standard ascorbic acid.

Keywords: Saussurea lappa, antioxidant, DPPH, H_2O_2, Nitrous oxide.

PT/ST3/0070

A NOVEL STRATEGY TO IMPROVE THE BIOAVAILABILITY OF ACTIVE CONSTITUENTS OF MACROTYLOMA UNIFLORUM THROUGH NANOPHYTOSOME FORMULATION

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Abstract: The aim of the study is to prepare & evaluate the bioavailability of active constituents of Macrotyloma uniflorum nanophytosomes. Extraction of seeds of Macrotyloma uniflorum and its phytochemical investigation. Preparation of nanophytosomes of Macrotyloma uniflorum. Perform the dissolution studies for anti-diabetic & antioxidant activity of Macrotyloma uniflorum extract. The plant Macrotyloma uniflorum having many phytoconstituents like alkaloids, flavonoids, saponins, phytosterols, carbohydrates, proteins, fixed oils & fats which are very important plant bioactive components reported to possess strong anti-diabetic activity & antioxidant activity, but it also contains several antinutritional factors (phytic acid, tannins, saponins) that reduce the bioavailability of nutrients. As to improve the bioavailability, Macrotyloma uniflorum phytosome complex was formulated by solvent evaporation method and its bioavailability was evaluated by using dissolution apparatus. From the above studies, it was concluded that the anti-diabetic activity & antioxidant activity of Macrotyloma uniflorum has enhanced by increasing the bioavailability.

Keywords: *Bioavailability, anti-diabetic, Macrotyloma uniflorum, phytosomes, Flavanoids.*

PT/ST3/0071

Formulation and evaluation of alcohol-free herbal hand sanitizer using oil of Salvia rosmarinus and Cymbopogan citratus

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Abstract: Hand sanitizer is a liquid dosage form and it is generally used to kill microorganisms in our hands. Alcohol free herbal hand sanitizer (AFHHD) plays an important role because by frequently using chemicals our hands become dry and rough, but by using herbal plants like *cymbopogon citratus* and *Salvia rosmarinus* they both have medicinal use as well as a moisturize the skin. Apple cider vinegar is used in the formulation which acts as a surfactant and preservative.

Salvia rosmarinus oil, *Cymbopogan citratus oil*, is known for its traditional use as antibacterial, and scientifically proved antibacterial and antifungal activity resulted in increased interest for using these oils for herbal hand sanitizer formulation. The purpose of this study was to develop AFHHS using natural ingredients that contains essential oils (EOs) that were effictive against a variety of diseases. The physiochemical property and evaluation of formulation were found to be within the limit in short term stability study. AFHHS were screened for antimicrobial activity against Gram-negative bacteria, Gram-positive bacteria and fungus using agar disc diffusion method and two fold serial dilutions (MIC) method. The antimicrobial activity of AFHHS showed good zone of inhibition in disc diffusion method and MIC. Formulated herbal hand sanitizer was showed a primary dermal irritation Index (PDII) 0.0 that showed no skin irritation.

Keywords: Herbal formulation, Antimicrobial activity, Physiochemical parameters.

PT/ST3/0072

In-Vitro Assesment of Valeriana Wallichi for Antioxidant Activity

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Abstract: Oxidative stress is one of prominent reason for many diseases like Alzheimer's disease, cancer etc. Agents that reduce oxidative stress i.e., antioxidants can be vital in preventing and protecting from diseases caused by oxidative stress. In ayurvedic system of treatment valerian is promoted for insomnia, anxiety, depression, premenstrual syndrome (PMS), menopause symptoms, and headaches. The previous research on antioxidant activity was performed for hydroalcoholic extracts of Valeriana Wallichi. The present study aimed at evaluation of the antioxidant activity of four different extracts namely hexane, ethanolic, chloroform and n-butanol of Valeriana wallichi (Valerianeaceae) taking ascorbic acid as standard by antioxidant capacity assays such as DPPH (1, 1- diphenyl-2-picrylhydrazyl radical), Nitric oxide and H2O2 scavenging method. All four extracts revealed significant antioxidant activity that may be attributed to high flavonoid content. The IC50 values found were between 15-20 ug/mL for 1:2 ration of combined extract in all in-vitro antioxidant models. Amongst all the extracts, the ethanolic extract resulted superior antioxidant activity. This study paved a way towards the screening and validation of traditional activities claimed for the drug.

Keywords: Valeriana wallichi, Antioxidant Activity, DPPH Model, Nitric oxide scavenging model

PT/ST3/0073

FORMULATION AND EVALUATION OF AN ANTACID AND CARMINATIVE SUSPENSION CONTAINING HERBAL DRUGS

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Abstract: The main objective of this study is to evaluate the antacid activity and carminative activity of cucurbita maxima and ginger respectively. Cucurbita maxima possess acid neutralization activity that is desirable for the treatment of gastric ulcer and Ginger act as carminative. The seeds are shade dried and powdered and then formulated into a suspension. The suspensions were then evaluated for the pH, Viscosity, sedimentation volume, redispersibility, antacid and antiulcer activity. All the formulations showed a pH in the basic range about 8.2, acid neutralizing capacity between 2-3mEq/ml, high sedimentation volume and good. The formulation containing extracts of the herbs showed significant antacid activity index as compared to one containing the powders of these drugs. From the above studies it was concluded that cucurbita maxima has antacid activity , it neutralises the gastric acid thereby producing antacid activity.

Keywords: *Cucurbita maxima, Ginger, Antacid, Carminative, Redespersibility, Sedimentation.*

PT/ST3/0074

TARTIGRADES-THE SUPREMOS OF UPCOMING MEDICINAL WORLD.

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Abstract: Tardigrades, also known as Water Bears, belong to phylum Tardigrada. The organisms which have the extraordinary capability to be resistant to extreme atmospheric conditions. Tardigrades have the capacity to withstand stress conditions right from the high altitudes of Himalayas to the deep oceans and from volcanic eruptions to the naked COSMOS & cosmic radiations. These characteristics of Tardigrades can thus prove to be of great miraculous importance in medicinal world. One such characteristics is their ability to withstand harmful radiations. Tardigrades possess unique proteins in them k/a Intrinsically Disorganized Proteins (IDPs) like CAHS (Cytoplasmic Abundant Heat Soluble), SAHS (Secretory Abundant Heat Soluble Proteins), LEA (Late Embryogenesis Abundant proteins), MAHS (Mitochondrial Abundant Heat Soluble). These mechanisms can be helpful in minimizing the harmful effects of various radiations on humans, especially in the Radiation therapy in Cancer treatment. Radiations can cause production of ROS (Reactive Oxygen Species), which cause deadly effects on the cells. Prominent Harmful effects of radiation therapy can be enlisted as Hair loss, sexual problems in men & women, Fertility problems, skin changes, itchy & darkened skin, etc. Cancer-like diseases may continue to arise in future where we will have to combat them with the available therapies; all we can do is reduce harmful effects of medicines and 'Tardigradial mechanisms' surely have some fascinating facts to think of.

Keywords - *Tardigrades, cosmic radiation, Disorganized Proteins.*

PT/ST3/0076

EVALUATION OF GLYCEMIC INDEX OF SOME COOKED VARITIES OF RICE PRODUCTS OF TAMILNADU

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Abstract: The Glycemic Index (GI) is a measure that grades carbohydrate-rich foods by what extend they elevate blood glucose levels compared to a normal food, which is glucose or white bread. Choosing low GI foods as part of a balanced lifestyle can help to minimize fluctuations in blood glucose levels. In the long term, this can help reduce the risk of complications of diabetes such as heart and kidney problems. Study was conducted to evaluate the GI of seven traditional rice varieties consumed by South Indians; Pacharishi, Basmathi, Jeeraka Samba, Ponni, Idly arishi, Thinai, Shamai, Kuthirai Valli. Healthy men and women aged between 20 and 22 years (7 males, 7 females) selected from students of the Karpagam Institutions, Coimbatore. They were clinically non-diabetic. The rice varieties were purchased from local market, washed well, cooked in hot water for 30 min individually. The glucose level was measured after overnight fasting; fasting blood glucose level was measured. The procedure was repeated for all the rice varieties. Then 50g of cooked rice were administered orally to the volunteers for determining the GI of the rice varieties containing 75g of digestible carbohydrate was administered to them after 14 hours and blood glucose were determined using Acci–check / one touch calibrated glucometer in duplicate and GI was estimated by GOD PAD method. The study samples are classified into high GI and low GI rice cultivars. The Basmathi rice shows a GI value higher than that of Kuthirai valli rice. The rapid starch hydrolysis could be ascribed to the comparatively extended cooking time (30 min).

Keywords: Basmathi, Ponni, Thinai, Shamai, Kuthirai valli

PT/ST3/0077

Potential bioactive secondary metabolites of Actinomycetes sp. isolated from lateritic soils of the heritage village of Nilgiris, Tamilnadu, India

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Abstract: The goal of the current study was to identify novel secondary metabolites produced by Actinomycetes species in the soil of the Nilgiris region of Tamil Nadu. To separate the actinomyces from the lateritic soil of the Nilgiris Biosphere, a standard methodology was created. In order to create a combination for the isolation of actinomycetes, four separate soil samples were taken from the surface and dug down about 10 cm. We have isolated a secondary metabolite as a result of the medium's formulation, which was done to increase secondary metabolite yield. Analysis of the isolated product using Fourier transform-infrared spectroscopy (FT-IR) and proton nuclear magnetic resonance (NMR) spectroscopy revealed distinct fingerprint regions indicating the presence of L-Lactic acid, Polypropylene, Sorbitan monolaurate, Cholesterol Oleyl carbonate, Cholesterol, 1-iodihexane, 1-Bromononane, Sitosterol, Lecthin and Didodecyl 3,3' thiopropionate. Antibacterial activity was carried out for the crude metabolites and it was found that they had no effect on S. aureus, B. subtilis, E. coli, P. aeruginosa, A. tumefaciens, S. typhi, S. epidermidis, *Micrococcus luteus*, and *Shigella boydii*. Antifungal testing was also done, and it was revealed that the isolated product has antifungal activity against *Aspergillus fumigatus*, *Candida albicans*, and *Epidermophyton*. We have shown that actinomyces sp. secondary metabolites have antifungal properties. These secondary metabolites might represent a new class of antifungal medications for treating fungus infections.

Keywords: *Secondary Metabolites, Antifungal activity, FTIR, Actinomyces, Soil microbes*

PT/ST3/0078

Isolation, Screening, and Identification of Novel Isolates of Actinomycetes for Antimicrobial activity

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Abstract: With the rise in multi-drug resistant (MDR) infections, the quest for novel bioactive substances from the environment has quickly gained impetus. By performing an initial screening on four soil samples, the antibacterial and antifungal potential of secondary metabolites of actinomycetes has been assessed in the current study. Bacterial strains such S. aureus, B. subtilis, E. coli, P. aeruginosa, A. tumefaciens, S. typhi, S. epidermidis, *Micrococcus luteus*, and *Shigella boydii* as well as fungal strains like *Aspergillus fumigatus*, *Candida albicans*, and *Epidermophyton* were subjected to primary and secondary screening. The fifteen most active microbial strains were identified based on growth conditions and other biochemical parameters. Morphological and cultural traits were used to classify the microbial strains. The aforesaid microbial isolates allowed us to obtain crude antifungal compound, despite the fact that fifteen organisms were separated from four samples. To determine how many chemicals are present, the crude metabolites were then characterised using FTIR and NMR spectra. The following substances were identified, L-Lactic acids, 1-Butanol, 2-Oxohexamethylenemine, eCaprolactum, isobutyl alcohol, Disodium edtate dihydrate, Sorbitol Monolaurate, and Nipasol M. Propylparaben. By this study we have demonstrated the isolation of novel actinomycete strains for the production of new metabolites with antifungal properties from the soil. This study also provides the path for further analyzing these Streptomyces sp. isolates for the best possible antimicrobial use.

Keywords: *Antifungal activity, Agar Diffusion assay, Zone f inhibition, Actinomyces, Secondary metabolites*

PT/ST3/0079

Isolation and identification of secondary metabolites producing actinomyces from soil

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Abstract: Secondary metabolites are substances made that aren't really necessary for microbial growth. The current research concentrated on the production of secondary metabolites from actinomycetes species using laboratory-scale fermentation as a precursor to large-scale industrial fermentation techniques. The Nilgiris Biosphere is home to various locations where the study was conducted. The actinomycetes isolates' cultural characteristics were investigated. We have determined the actinomyces species from the soil based on its cultural characteristics. The chosen actinomyces produced crude secondary metabolite. The metabolites were found to be heat-stable in DMSO and easily soluble in water. FTIR was used to characterise the crude metabolite. Using FTIR and NMR studies, it was discovered that the molecules contain a variety of functional groups that aid in the structure prediction of secondary metabolites. We found the presence of L-Lactic acids, 1-Butanol, 2-Oxohexamethylenemine, eCaprolactum, isobutyl alcohol, Disodium edtate dihydrate, Sorbitol Monolaurate, Nipasol M. Propylparaben and poly (methyl methacrylate). The crude metabolite was used to explore its potential for antibacterial, antifungal, and antioxidant effects, but none of these effects occurred. Therefore, additional research into the crude metabolite's such as anti-inflammatory, anticancer, and antiviral effects may be explored in future.

Keywords: *Niligiri Biosphere, Soil Microbes, Actinomyces, Secondary metabolites*

PT/ST3/0080

HERBAL ROLE TOWARDS ICTHYOSIS

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Abstract: Ichthyosis is a condition that causes widespread and persistent thick, dry skin on the "fish scales". It is a genetic skin condition usually passed down from parents. however, some people may be the first in a family to develop ichthyosis as a result of a new genetic mutation. Ichthyosis can only affect the skin, but some forms of the disease can also affect internal organs. The more severe and rare forms of the disease, such as lamellar ichthyosis and epidermolytic hyperkeratosis, are usually apparent at birth and marked by bright red, scaly skin. Types of ichthyosis by identifying: 1. The genetic mutation. 2. Pattern of inheritance by analyzing pedigrees. 3. Symptoms, including their severity and the organs they affect. 4. Age at which first symptoms appeared. Clinical presentation, pattern of inheritance, and laboratory evaluation may establish a precise diagnosis, which can assist in prognosis and genetic counseling. Medicinal plants are an important source of molecules with medicinal properties due to the presence of natural compounds. Medicinal plants are useful in curing human diseases and play an important role in healing due to the presence of phytochemical constituents. Ayurveda and other Indian publications have reported the use of plants in the treatment of various human ailments. Medicinal plants are an important resource in the fight against serious diseases in the world.

Key Words: Ichthyosis, Gene mutation, Ayurveda, Medicinal plants

PT/ST3/0081

A Review on Resent Strategy on Frostbite Management

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Abstract: The Indian Army lost 163 personnel deployed into position for military action at the Siachen Glacier, the world's highest battlefield, during the last 10 years, according to details provided by Defence Minister Nirmala Sitharaman. Six officers were among the army personnel who lost their lives while guarding the glacier which is at an altitude of above 20,000 ft. The Siachen Glacier in the Karakorum Range is known as the highest militarised zone in the world where the soldiers have to battle frostbite and high winds. Avalanches and landslides are common at the glacier during the winter and temperatures can drop to as low as minus 60 degrees Celsius. Frostbite is not only the tread to the military persons but it also affects the normal civilization people who are living near the extreme minus 60 degrees Celsius climate. Frostbite is a severe health condition that is manifested in situations where an individual is exposed to extreme cold conditions or minus 60 degrees Celsius climate. Individual may also affected with freeze burn like exposing to ice packs/ dry ice, or just being exposed to a low wind speed in air temperature below –15 °C can result in a freeze-burn. The manifestations vary from a self-healing superficial burn on skin to conditions as severe as gangrenous necrosis, leading to auto-amputation of the affected limb. Treatment for the frostbite patients, will be initiated with the first aid and home remedies and followed by post-injury treatments will be carried in the hospital. Treatment at right time and right place will save the life of the patients and also the unnecessary loss of the body parts. Currently prophylactic treatment is not commonly used. This review will focus on the cause of the frostbite, treatment model and preventive measurement.

Keywords: Frostbit; Military person; Treatment; Cold injury; Cold climite

PT/ST4/002

Antiviral activity of Lactobacillus plantarum JDSHRD bacteria towards alimentary tracts viruses

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Abstract

The COVID-19 outbreak highly demanded the need for some non-synthetic antiviral agents mostly as nutraeutical agent. The use of these functional food as boomed in the time of pandemic. The working of the nutraceutical agent is supporting to the modern antiviral therapy. The extensive use of probiotics is recently increased due to the potential antiviral activity in some diseases and needed to explore the mechanisms of action. In this research Lactobacillus plantarum JDSHRD was isolated from the sheep milk and probiotics properties were explored. Various activities like gastric juice tolerance, intestine juice tolerance, auto-aggregation, hydrophobicity along with HT-29 cell adhesion were determined. Phylogenetic tree of the same culture was determined. Strain Lactobacillus plantarum JDSHRD was taken and exhibited non-pathogenic (γ-haemolytic) and negative for mucin degradation. Analysis of 16S rRNA, recA and dnaK gene sequences revealed that strain JDSHRD was belonged to Lactobacillus plantarum subsp. plantarum. L. plantarum JDSHRD. This strain showed more adherence to HT-29 cells as compared to the E.coli. The following study also exhibited anti-fungal activity on Aspergillus niger along with ease in synthesis of nano-particles which was determined by the UV-visible method. Finally, it was concluded that the strain showed effective inhibition against food pathogens along with cell adhesion activity to prove as functional food.

Keywords: Lactobacillus plantarum JDSHRD, Fermented foods, 16S rRNA etc.

PT/ST4/004

Study of Anticonvulsant Activity in wistar albino rats using Polyherbal Ayurvedic Formulations

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Abstract

Imbalance between the levels of excitory and inhibitory neurotransmitters in brain leads to convulsion, a central nervous system disorder. As compared to allopathic synthetic drugs polyherbal ayurvedic formulations like brahmi ghirtham and saraswatha churnam provides better safety profiles and less interaction. This study was conducted to assess the anticonvulsant activity of brahmi ghirtham and saraswatha churnam by maximal electroshock seizure (MES) model on albino (wistar strain) rats. All animals were obtained from animal house of our college by prior IAEC approval of our college. Albino rats of either sex was taken and divided into six groups, each consisting of four rats. One group was used as control, one as standard (phenytoin 25mg/kg, ip), and two groups treated with the test drug brahmi ghirtham (5mg/kg po and 10 mg/kg po) and the remaining two groups treated with the drug saraswatha churnam (100mg/kg po, 200mg/kg po) for three days. Seizure was induced to the group animals by using electroconvulsiometer. Duration of various phases of convulsions was observed. The brahmi ghirtham (5mg/kg po, 10 mg/kg po) and saraswatha churnam (200mg/kg po) produced reduction in time or abolition of tonic extensor phase of MES-convulsions in all the animals of test drugs treated groups except group administered with saraswatha churnam 100mg/kg po.We conclude that brahmi ghirtham (doses of 5mg/kg po and 10 mg/kg po) and saraswatha churnam (200mg/kg po) have got an anticonvulsant effect against MES induced convulsion in wistar albino rat.

Keywords: Anticonvulsant, Maximal Electroshock Seizure, Phenytoin, brahmi ghirtham, saraswatha churnam

PT/ST4/006

Anti-proliferative and Apoptosis inducing effect of plant extract on MCF-7 Cell line.

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Abstract

Medicinal plants having phytoconstituents that provide an great source of anticancer drugs in terms of both variety and mechanism of action. Induction of apoptosis plays a key role in success of plant products as anticancer agents. The present study was designed to determine the antiproliferative and apoptotic events of Gliricidia sepium and Epipremhum Aureum plant extract on MCF 7 cell line. Percentage of cell viability was evaluated by Brine shrimp lethality assay and MTT assay. Plant extract showed a dose-dependent inhibition of cell proliferation of MCF 7 cells. The antiproliferative effect was also associated with induction of apoptosis as well as morphological changes and DNA fragmentation. The morphology of apoptotic nuclei was quantified using DAPI staining. Thus, these findings suggest that the extracts from Gliricidia sepium and Epipremhum Aureum had strong antiproliferation and potent induction of apoptosis. Thus, it indicates that M. Gliricidia sepium and Epipremhum Aureum leaf extracts has potential for cancer chemoprevention and can be claimed as a therapeutic target for cancer.

Keywords: Anticancer, Apoptosis, Anti-proliferative, Gliricidia sepium, Epipremhum Aureum, MCF-7, DAPI staining.

PT/ST4/009

Zoonotic disease transmission and accessible vaccine

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Abstract

From the past two decades (2000-2020) until now zoonotic diseases are considered pandemic due to their wide range of outbreaks. Zoonotic diseases are referred to as infectious diseases that are transmitted from vertebrates to humans or humans to vertebrates as a primary transmission of disease. The secondary transmission occurs between human to humans through direct contact, nasal droplets, food, water, and environmental conditions. Microbes are the major vector for these infectious diseases which include viruses, bacteria, fungi, and protozoa. Some of the vectors do not produce any symptoms until they enter into the systemic circulation (ex: Monkeypox does not show any symptom during the period of incubation) and some others bring off symptoms even after recovering from it (ex: after covid, the patient didn't recoup the sensation of taste and smell). Even though there is no medication for these infectious diseases, researchers are entailing in the process of tracking down the vaccination for these diseases. PCR (polymerase chain reaction) test is used to diagnose the infectious one from the mucosal swap or blood of an infected one. Vaccines are produced from the isolated genetic material of the vector and bring out vaccines by diminishing the genome replication. This work aims at providing complete information about zoonotic infections and their treatment and Prevention approaches.

Keywords: Zoonotic disease, Vaccine, zoonosis, disease transmission, pandemic.

PT/ST4/0011

Drug abuse in cardiovascular diseases

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Abstract

A large amount of substances and their association can lead to worsening of latent or active cardiovascular diseases. It includes different classes of substances namely, anabolic androgenic steroids, Hormones and related substances, beta 2 agonist, Diuretics, stimulants, Narcotics, cannabinoids, Gluco corticosteroids, Alcohol and beta blockers. The second part is dedicated to cardiovascular effects than can occur during the use and abuse of most common prescription drugs such as Antipsychotic, Antibiotic, Antiviral, Antihistaminic and Antineoplastics drug. Cardiac complications resulting from cocaine use have been extensively studied because of the complication pathophysiological mechanism. It aims to review the underlying cellular and molecules mechanism of acute and chronic effects of cocaine on the cardiovascular system. Variable results have been reported for the chronic effect of cocaine.

Keywords: - Class of substances, prescription drugs, Cardiac complications, pathophysiological mechanism, Cellular and molecular mechanism.

PT/ST4/0012

Study on In vitro Anti-Inflammatory activity of Ethanolic Extract of Alkannatinctoria (L.) Tausch Dried Root

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Abstract

Indian medicinal plants always provide a rich source for anti-inflammatory agents. The present investigation was carried out to study about the in vitro anti-inflammatory activity of ethanolic extract of Alkannatinctoria root. For anti-inflammatory activity, in vitro methods such as Membrane Lysis (heat-induced hemolysis) assay and Effect on Protein denaturation assay was carried out using Diclofenac sodium as a control. In this study, the bioactive compounds from this root extract showed an anti-inflammatory effect. The extract showed a maximum protection from hemolysis of goat red blood cells with 64.56% at 1000 µg/ml concentration and the diclofenac sodium shows 83.4% at 1000 µg/ml conc. And, it maximum prevents protein denaturation with 70.8% at 1000 µg/ml conc. while Diclofenac shows 88.6% at 1000 µg/ml conc.

Keywords: Alkannatinctoria, Hemolysis, Protein denaturation, Diclofenac, Anti-inflammation.

PT/ST4/0013

Diabetic Neuropathy Screening of Specioside compound through Molecular Docking Studies

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Abstract Diabetic neuropathy causes permanent/temporary disability to around 60% of the diabetic patients worldwidewith severe pain and tingling along with worsening weakness in limbs. Soluble epoxide hydrolase (sEH) enzyme is responsible for degradation of epoxy fatty acids that mediate pain and inflammation in experimental models. Mutations in human tyrosyl-tRNAsynthetase (TyRS) and its overexpression is responsible for neuronal degradation leading to neuropathy. Molecular docking is one of the safest methods to test the activity of any drug which overcomes the hurdles of stringent processes of ethical clearance and limitsthe use of experimental animals. Thus to investigate the effect of Specioside isolated from Keigella Africana fruit extract, molecular docking of speciosidewas performed in protein models for sEH(PDBID:4OD0) and TyRS (PDBID:5THH)and TTPU and TYR-401were used as standard drugs respectively. The docking was done using MGL tools 1.5.6 and autodock 4.2. Drugs structure were created using ChemSketch (ACD/ChemSketch Freeware-2012). Docking and scoring was done using Molegro Virtual Docker (MVD) and MolDocksoftwares. Specioside showed a better docking and interaction with sEH with highest MolDock score of -108.782 and H-bond score of -9.771 where in the standard scored 89.876 and -3.193. The same results were repeated on the TyRS receptor too with specioside scoring Moldock score of -76.433 and H-Bond of -70.572 whereas the standard drug showed -60.074 and -56.749. Results suggest that specioside had a better binding and affinity towards sEH and TyRS resulting in prevention of neuropathy by inhibiting the translation of sEH and mutations in TyRS.

Keywords:Specioside, Molecular docking, Neuropathy, Soluble Epoxide Hydrolase, Human tyrosyl-tRNAsynthetase.

PT/ST4/0014

PREVENTION AND ADJUNCT THERAPY FOR COVID-19 (NAC, SULFURDONORS)

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Abstract

In 2019, the world changes into upside and down of the pandemic of belongs to the family of Coronarvirus and disease severe acute respiratory syndrome coronavirus2 SARS-COV-2 (COVID-19). The virus is originated in china (Wuhan).The virus can easily affect people through the Respiratory droplets, cough ,sneezes, talks or sings. The virus can spread through air and the careless of touching public places can contain viruses. The COVID-19 virus entered in the body maybe the symptoms appear in 2 to 14 days includes in the symptoms of Fever, Cough, Tiredness, Shortness of the breathing, etc. The infected person must be isolated for 4to5 weeks, prevention and adjunct therapy done by (NAC) N-Acetylcysteine and the sulfur donors. NAC is the pleiotropic protein with the dual antioxidant mechanism it may neutralize free radical and acts as donor, it has the immune modulating, anti- inflammatory effect. Glutathione a sulfurdonor antioxidants without the glutathione cells cannot survivor. Covid -19 affected person has the inflammatory response in the body and increase oxidative stress with higher concentration of free radical, it resulted in the damage & can increase manifold. In such cases the body demanded for antioxidant, immune booster and glutathione adjuvant nutrient supplement for prevention management and recovery from Covid-19. This work discusses about the increase in the immune booster in Covid-19 affected patients.

Keywords: Antioxidant, Anti-inflammatory, Glutathione, Covid-19, Antidote.

PT/ST4/0015

DRUG REPURPOSING IN DIFFERENT DISEASES

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Abstract
Drug repurposing is also known as drug re-profiling or drug repositioning. The development of new drugs might take 10 to 15 years to complete all 3 phases of clinical trials. Alternatively, Drug repurposing is the way to find new uses for existing or investigational drugs. It is another tool to speed up drug development. The traditional De novo drug discovery and development are expensive, time-consuming, risky, and complicated procedures. But Drug repurposing is a fast, hopeful, and cost-effective method that can overcome traditional de novo drug discovery and development. Drug repurposing would be a more helpful method to develop drugs against different diseases. In the history of medicine there have been several examples of repositioning drugs, the oldest example is acetylsalicylic acid (aspirin) which was initially marketed as an analgesic, then repositioned at low doses as an anti-platelet. Drug repositioning has enormous interlinked advantages. It has four stages: compound identification, compound acquisition, development, and FDA post-market monitoring. The various drugs repurposing for different diseases and advantages are discussed.

Keywords: Drug repurposing, drug development, Novel Disease, de novo drug and identification.

PT/ST4/0016

DNA topoisomerase inhibitor antibody drug conjugate

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Abstract

DNA topoisomerase are the enzyme which catalyse the changes in topological state of DNA and can lead to overwinding of DNA duplex during DNA replication and DNA transcription. Topoisomerase inhibitor used for the anti-cancer agents and integrate into antibody conjugates. The topoisomerase-1 [TOPO-1] has SN-38, the active drug form of cancer drug IRINOTECAN. The TOP-1 inhibitor is being examined clinically in Antibody Drug Conjugate [ADC] and DS-8201 [Transtuzumab deruxtecan] an ADC targeting human epidermal growth factor receptor 2-positive [HER 2+] cancers.Sacituzumab govitecan [TROP-2], another ADC directed antibody and topoisomerase inhibitor used for the treatment of metastatic triple negative breast cancer. Triple-negative breast cancer (TNBC) is considered an aggressive cancer because it grows quickly. In this review we are over viewing the topoisomerase inhibitor used as anticancer agent.

Keywords: Topoisomerase inhibitor; SN-38; DS-8201; Transtuzumab deruxtecan; TROP-2; Sacituzumab govitecan.

PT/ST4/0017

PREMATURE HAIR GRAYING – The Current challenge

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Abstract

Healthy hair serves as a great esthetic tool and means of nonverbal communication. Graying of hair is usually due to ageing. Premature Hair Graying (PHG) is defined as graying of hair before the age of 20 years. Multiple mechanisms acting at diverse levels and follicular locations contribute to hair graying varying from loss of melanocyte stem cells, unbalanced differentiation, defects of migration, apoptosis of melanocytes. Recent studies have focused on the imperative role of reactive oxygen species especially in process of PHG at various stages such as melanogenesis, hair pigmentation, melanocyte transfer, stem cell maintenance, & gene expression (BCL-2,TRP1,TRP2) in humans. In Ayurveda PHG is described as Akala-Palitya, according to that, the three doshas:- Vata, Pitta & Kapha regulate body activity. The Bhrajaka pitta is responsible for the pigmentation of your skin and hair. Imbalance in Bhrajaka Pitta causes insufficient melanin production, which results in PHG. Polydopamine deposition on hair surfaces using CuSO4/H2O2 as a trigger. This method gives effective and faster (5min) results than those of commercial permanent hair dyes. Synthetic melanin has been explored recently & efficient deposition of synthetic melanin on human hair without the need for strong oxidants to generate black/brown coloration from blond hair.

Keywords: Premature Hair Graying, hair pigmentation, melanin.

PT/ST4/0021

Identification of Potential dual Inhibitors of PI3K and mTOR by Using A Structure-Based Computational Approach

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Abstract

Breast cancer is one of the common types of cancer which affects both men and women. Commonly genomic abnormalities in cancer are due to aberrations in the PI3K/AKT/mTOR pathway. The dual targeting of PI3K and mTOR inhibits the kinase-positive feedback loops more effectively. Therefore, in the current study structure-based models like molecular docking, MM-GBSA, Qikprop, induced fit docking, molecular dynamics, and thermal MM-GBSA were used to identify phytochemicals from the zinc 15 database, which may inhibit both PI3K and mTOR. After docking the phytochemicals with PI3K (PDB 4FA6), we selected the top ten ligands based on the docking score, amongst which salvianolic acid C had the highest docking score. Hence, we also docked other derivates like salvianolic acid A. All the selected ligands had binding energy of more than -30 Kcal/mol. The predicted ADME showed that the ligands have druggable properties. By performing molecular dynamics of the top five ligands and salvianolic acid A, it was found that ZINC000059728582, ZINC000257545754, ZINC000253532301, and salvianolic acid A form a stable complex with PI3K protein, amongst which ZINC000014690026 showed interaction with Val 882 for more than 89% of the time. By literature survey, we found that salvianolic acid A is already proven to suppress tumor growth in acute myeloid leukemia by inhibiting PI3K/AKT pathway, but the exact protein target is unknown. Therefore, the present study identifies new molecules and provides evidence for the salvianolic acid A for the dual inhibition, which helps in drug development for cancer.

Keywords: PI3K/mTOR pathway, Molecular Dynamics, phytochemicals, Salvianolic acid A

PT/ST4/0023

Cardioprotective Investigation of Antihypertensive Drugs In Doxorubicin And Carvedilol Induced Cardiotoxicity

Abstract

The protective effects of amlodipine and carvediol on DOX and CYP induced cardiotoxicity were investigated in albino wistar rats by measuring the enzymatic, non-enzymatic antioxidant levels, serum enzyme levels and study of ECG alteration. Cardio toxicity was induced on 1st (CYP 200 mg/kg ip) and 7th day (DOX 50 mg/kg ip) for different groups of animals. The rats were divided in to 4 groups (n=6), Group-I normal control, group-II DOX (50 mg/kg ip), group-III Amlodipine (10 mg/kg oral) + doxorubicin (50 mg/kg ip) and group-IV carvediol (3mg/kg oral) + doxorubicin (50 mg/kg ip) for 10 days. On 11th day rats were anaesthetised (ketamine100mg/kg ip), and ECG was measured using power lab software. Blood samples were collected by retro orbital plexus and the obtained serum was used for the estimation of CK, CK-MB, LDH, calcium. The rats will be sacrificed by ketamine over dose and the heart tissue was isolated and PMS was prepared from its portion. From the PMS SOD, catalase, GSH, LPO were estimated. The remaining portion was used for histopathology study. The results of this study reveals that there are increased level serum and tissue biomarkers in DOX amlodipine and carvediol treated rats and tissue biomarkers level had decreased in DOX and CYP induced cardio toxicity. The animals treated with Amlodipine and Carvediol showed decrease level of serum biomarkers. The tissue antioxidant level has increased. Further, ECG and Histopathological study showed significant improvement in amlodipine and carvediol when compared to DOX and CYP treated rats.From the results of the study it is concluded that amlodipine and carvediol has showed cardioprotective effect on DOX and CYP induced cardiotoxicity in rats.

Keywords : Amlodipine, carvedilol, cardiotoxicity.

PT/ST4/0025

Computer-assisted repurposing approach (CARA) in Quest of new Anti-Alzheimer's drugs

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Abstract

Alzheimer's disease, a progressive neurodegenerative disorder, is the most common form of dementia associated with aging. Globally, there are estimated to be 24 million dementia sufferers and the number is expected to double every 20 years. Some indicators, like low levels of ach, Aβ deposits, tau-protein aggregation, neurofibrillary tangles, and oxidative stress are thought to play important roles in pathogenesis which can be explored for drug discovery though the aetiology of this disease is complex and not completely understood. The aim and objective of the study is in-vitro and in-vivo screening of FDA approved drugs for Anti-Alzheimer activity guided by computational methods. Selection of effective and appropriate targets, design, discovery of new chemical entity & success in preclinical-clinical studies is highly challenging task. Thus, drug discovery and development is time-consuming, costly and extremely risky. In view of this, Drug repurposing is a promising approach to achieve therapeutic success in a shorter period of time, with less attrition in drug discovery. In present research work, we are approaching for rational drug repurposing using CADD tools. The bioactive conformation of standard drug Donepezil is selected as a query structure to screen FDA approved drug molecules to find the most similar drugs with respect to its 3D shape and electrostatic features. Promisingly similar FDA approved drug are then processed for molecular docking studies to understand their comparative interactions with active site of Donepezil. Molecules with good similarity and docking score will be selected for in-vitro and in-vivo studies to check their therapeutic effectiveness.

Keywords: Alzheimer's disease, Donepezil, FDA approved drugs, Drug Repurposing.

PT/ST4/0026

Effect of Polyherbal Extract on Wistar Rats with Renovascular Hypertension

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Abstract
Hypertension or high blood is a significant public health issue increasing the risk of stroke, coronary heart disease, peripheral vascular diseases, heart failure, and renal failure. Although the fact that there are numerous antihypertensive medications available for the management and treatment of hypertension, they are associated with adverse drug reactions and cannot control the associated pathophysiological progression due to it. In this study the composite of polyherbal extracts from Annona muricata, Brassica oleracea, Carvum carvi, and Apium graveolens tested against surgically generated renovascular hypertension with 2Kidney1clip (2K1C) surgery in Wistar rats. After 28 days administration of herbal composite to hypertensive Wistar rat's carotid artery cannulation was performed for direct measurement of the mean arterial pressure, systolic blood pressure, and heart rate and lipid profile, urine parameters. At doses of 200 mg/kg and 400 mg/kg the polyherbal mixture significantly lowered mean arterial pressure, systolic & diastolic blood pressure, and heart rates, after acute administration of polyherbal mixture has showed significant antihypertensive activity & as a standard agent captopril is used, probably acting through angiotensin converting enzyme inhibition & diuretic effect. As a result, it can be used as potential antihypertensive medication as adjunct or alternative therapy.

Keywords: Polyherbal extracts, diuretic, Antihypertensive, Ace-inhibitor.

PT/ST4/0027

Evaluation of Pharmacodynamic Interaction of Phytoconstituent and Antitubercular Drugs in Wistar Rats

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Abstract
Tuberculosis (TB), one of the deadliest diseases of its time, is now treatable. However, hepatotoxicity is an issue with the anti-TB treatments. The study was conducted to evaluate potential of berberine to address this. The study also seeks to assess the antibacterial effects of berberine in combination with particular antitubercular medicines against E. coli and S. aureus. The Alamar Blue Assay is used to measure the antitubercular activity of berberine against Mycobacterium tuberculosis and to perform pharmacodynamic interaction assessment between berberine and antitubercular medications. The assessment of Berberine's hepatoprotective effectiveness against hepatotoxicity brought on by specific antitubercular medications (rifampicin, isoniazid). The retention factor (Rf) result for the berberine, rifampicin, and isoniazid combination does not indicate any compatibility when compared with single drug. Zone of inhibition study showed synergistic effect of berberine with rifampicin & isoniazid against S. aureus and E. coli. In-vitro antitubercular study of rifampicin showed activity at all concentration, while isoniazid at 50µg/ml, and berberine at 6.25µg/ml while co-administration of berberine with rifampicin, isoniazid for 28 days treatment showed significant increase in body weight, level of albumin and total protein while significant decreased in serum transaminase, alkaline phosphatases and total bilirubin. Berberine showed anti-tubercular activity at different concentrations. The hepatoprotective action of berberine was concluded by evaluation of liver parameters and body weight. From the histopathological reports of liver, it was concluded that the berberine combined with (isoniazid & rifampicin) improves hepatocellular vacuolation and infiltration of inflammatory cells.

Keywords: Berberine, hepatoprotective, zone of inhibition, anti-tubercular activity.

PT/ST4/0028

Evaluation of Herbal Composite for Activity against Anti-cancer induced Nephrotoxicity in Wistar rats

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Abstract

Nephrotoxicity is a significant side effect and a dose-restriction mechanism for cisplatin treatment. Recent research reveals that oxidative stress and inflammation is responsible for acute renal failure produced by Cisplatin. Curcumin and resveratrol are considered to have potent anti-inflammatory and antioxidant effects. The goal of current investigation was to determine whether composite of curcumin and resveratrol attenuates nephrotoxicity caused by Cisplatin in Wistar rats. For 10 days, a dose of 100 mg/kg and 400 mg/kg of the herbal composite was given together with 5 mg/kg of Cisplatin. Serum creatinine, blood urea nitrogen, creatinine, and nitrite levels were measured in order to evaluate renal damage. Renal malondialdehyde levels, reduced glutathione levels, catalase and superoxide dismutase enzyme were measured in order to quantify renal oxidative stress. Single dose of Cisplatin showed significant oxidative stress, severe inflammation and nephrotoxicity. Herbal composite treatment resulted in significant decrease in inflammation, dose-dependent improvement of renal function, reduction of oxidative stress and protects against nephrotoxicity produced by Cisplatin in Wistar rats. Herbal composite of curcumin & resveratrol can be used as therapeutic adjuvants against Cisplatin nephrotoxicity.

Keywords: Cisplatin, Nephrotoxicity, Herbal composite, Anti-inflammatory, Antioxidant.

PT/ST4/0029

Effect of combination of Alcoholic extract of Zingiber officinale (AEZO) and hydroalcoholic extract of Brassica oleracea (HAEBO) on papain induced osteoarthritis in Wistar rats.

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Abstract

Osteoarthritis (OA), a common form of arthritis which is also called as "degenerative joint disease" that typically affects the joints just like the knee, hip, and spinal joints. The prevalence of OA is found to be 22% to 39% in India, and affecting more than 500 million people globally. the prevalence of OA is increased via associated risk factors like age, obesity, gender, joint injury, and genetics . Osteoarthritis causes pain, functional limitation, and deterioration. Herbal remedies can be used to treat such diseases. The alcoholic extract of Zingiber officinale (AEZO) and the hydroalcoholic extract of Brassica oleracea (HAEBO) in 1:1 proportion were evaluated against papain-induced OA. The paw volume, blood and liver parameters, serum calcium level, histopathology, and radiology were performed once after the treatment of 28 days with the combination. The paw volume was found to be reduced, whereas the percent inhibition of paw edema was found to be enlarged considerably in the combination of AEZO and HAEBO treated groups. The histological and radiological results also indicate that a mixture of AEZO and HAEBO in 1:1 proportion has anti-arthritic activity in papain-induced osteoarthritis.

Keywords: Osteoarthritis, Synovial inflammation, Anti-citrullinated protein antibody.

PT/ST4/0030

Antimicrobial efficacy of Achyranthes aspera linn.

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Abstract

The infectious diseases are becoming more deadly and it is on the rise. As a result of the emergence of resistance, antibiotics that were once used to treat ailments are no longer beneficial. To fight infections, higher antibiotic doses are required compared to earlier doses. However, raising these doses has a negative net effect. The use of natural antibacterials instead of synthetic antibiotics may be one solution to the mentioned issue. The present study evaluated the effect of plant extract from Apamarg for its ability to treat Klebsiella pneumoniae bacteria. Antimicrobial resistance is a worldwide problem associated with pneumonia. The American Type Culture Collection (ATCC) strain of Klebsiella pneumoniae was cultured from the sample obtained from the Department of Microbiology, Dr. D.Y. Patil Medical College, Hospital, and Research Centre, Pimpri, Pune. Good-quality stems and roots of Apamarg were taken. The extract was made with Dimethyl sulfoxide (DMSO) . Inhibitory concentrations of 10mg/ml, 20mg/ml, and 30mg/ml of extracts were done by using Agar well diffusion method and the same compared with Ciprofloxacin at equal concentration. DMSO extract of Achyranthes aspera showed significant antimicrobial action on the colonies of Klebsiella pneumoniae bacteria. Achyranthes aspera has good antibacterial activity against Klebsiella pneumoniae with the zone of inhibition by 10mm DMSO extract in comparison to Ciprofloxacin.

Keywords: DMSO extract, Antibacterial activity, Achyranthes aspera, Pneumonia

PT/ST4/0031

Knowledge, Awareness and Acceptability of Maternal Influenza Vaccine Amongst Pregnant and Delivered Women from Pune Urban Area

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Pregnant women are more at risk for influenza, which has an impact on the pregnancy outcome and the health of the unborn child. In 2012 WHO advised that pregnant women should receive an influenza vaccination at any stage of pregnancy as the seasonal inactivated influenza vaccine has proven to be safe and effective in preventing influenza in pregnancy and newborns as well. Influenza vaccination was initiated more than six years in the Pune urban area, however, it was observed that it was not optimal and the hesitancy for it due to lack of knowledge and awareness was reported. So the study to assess knowledge and awareness of maternal vaccines and the acceptability of the influenza vaccine among pregnant women is needed. For this study, a survey questionnaire comprising questions pertaining to knowledge, awareness, and acceptance of the influenza vaccine was designed.500 participants were enrolled from different sites in the Pune area. Study findings conclude that the rate of influenza vaccination is found to be increased by educating healthcare professionals and pregnant mothers. The vaccine acceptability was found to be significantly associated with vaccine knowledge, gravida, education, occupation, and family income. A hospitalization and death rate in pregnant women was found to be significantly lower in vaccinated pregnant women. The risk of foetal death and premature birth is decreased by the antenatal influenza vaccine. When compared internationally to prior statistics, a significant rise in vaccination is observed during the study period.

Keyword : Influenza Vaccine, Pregnant Women, New-born, Antenatal.

PT/ST4/0032

Evaluation of Natural Bioactive Compounds for Neuroprotection in Rotenone- Induced Swiss albino mice Model for their Anti-Parkinson's activity

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Abstract

Parkinson's disease (PD) is chronic neurological disorder affecting 1 in 100 persons of average age of onset 60 years worldwide. Although numerous medications are available for the treatment and management of PD, they are with limitations of providing only symptomatic relief and associated with unavoidable adverse effects, so the need to explore alternative therapies still exists. The goal of this research was to evaluate the neuroprotective potential of combination of Ginkgo Biloba (GB) and Mucuna Pruriens (MP) extracts (1:1 proportion) along with in-vivo toxicity study at dose of 1000 mg/kg, in-vitro acetylcholinesterase inhibition, for anti-Parkinson's potential at 25,50 & 100 mg /kg in rotenone induced mice model. The findings of the present study revealed that composite of MP and GB is safe at 1000 mg/kg and at the doses of 25, 50, 100 mg/kg improved the impaired cognitive and motor functions, attenuates the level of oxidative stress and mitochondrial dysfunction in rotenone induced mice model of Parkinson's disease. While in vitro study the combination showed IC50 value as 359.46 mg which is higher than combination of levodopa carbidopa. MP-GB combination showed neuroprotection in rotenone induced mice model of PD. MP- GB combination at dose of 100mg/kg could be a therapeutic alternative for the treatment and management of PD.

Keywords: Parkinson's Disease, Dopamine, Macuna Pruriens, Ginkgo biloba, Neuroprotective potential, Acetylcholinesterase.

PT/ST4/0033

Study of the effect of maternal Influenza Vaccine on Birth Outcome in tertiary care hospital

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Abstract

The study was designed with broad objectives of determining the safety profile of influenza vaccine among pregnant women and its birth outcomes. This was a prospective cohort study which involved vaccinated and non-vaccinated pregnant women from the delivery ward of Yashwantrao Chavan Memorial Hospital. This study involved continuous recruitment of pregnant women who has taken as well as not taken influenza vaccine in their pregnancy. Total 626 pregnant women were approached for this study, from which 550 got enrolled in the study out of which 262 were vaccinated pregnant women and 288 were non vaccinated women in. The participants were monitored from the day of their delivery and then the weekly follow-up for three months was taken. The participants were enrolled after their informed consent process was done. The demographic information was collected of pregnant women: past health history, comorbidities (if any), and her health conditions in pregnancy phase was collected retrospectively at the time of her delivery. Also the demographic birth outcomes details were collected prospectively from mother directly. This data was very maintained and documented which was further analysed after data collection. It seems that influenza vaccine has no any adverse effect on mother as well on infants and it's safe. Also, other parameters related to the birth outcomes like LBW, preterm birth, congenital anomaly, stillbirth were studied. As it was an academic project there was a limitation of study population, so based on such small number it is difficult to draw conclusions about our secondary objective of study.

Keywords: Influenza vaccine, pregnant women, Birth outcome.

PT/ST4/0034

Antimicrobial efficacy of Vitex negundo

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Abstract

Many plants are well known to have antimicrobial action. Our study mainly focused on antimicrobial efficacy of Vitex negundo. In this, we did the screening of antimicrobial action of extracts of Vitex negundo on Pseudomonas aeruginosa. Antibiotics previously used to treat infections are now a days ineffective due to the development of resistance. Higher doses as compared to previously used doses of antibiotics are needed to treat infections. But an increase in these doses does more harm than good. One of the options to solve the above problem could be the substitution of synthetic antibiotics with natural antibiotics. In present study efficacy of plant extract of Nirgundi for its antibacterial activity against Pseudomonas aeruginosa was studied. The American Type Culture Collection (ATCC) strain of Pseudomonas aeruginosa was cultured from a sample obtained from the Department of Microbiology, Dr. D.Y. Patil Medical College, Hospital, and Research Centre, Pimpri, Pune. Extracts of Nirgundi were made with ethanol. Inhibitory concentrations of 10mg/ml, 20mg/ml, and 30mg/ml of extracts were tested by using the Agar well diffusion method and the same compared with the antibiotic Ciprofloxacin. An ethanolic extract of Vitex negundo showed considerable antimicrobial action on the colonies of Pseudomonas aeruginosa bacteria. Vitex negundo has significant antibacterial activity against the selected hospital pathogens and the maximum activity on Pseudomonas aeruginosa with a zone of inhibition of 20 mm by ethanol extract in comparison to Ciprofloxacin.

Keywords: Ethanol extract, antibacterial activity, vitex negundo, ciprofloxacin.

PT/ST4/0035

Innovation of IUD's over the years and Future of LARC's

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Abstract

The latest generation of IUD is the most cost-effective, environmentally friendly, and easy to use as compared to other contraceptives with their long term effects. The barrier method which is made from synthetic latex and use of additives and chemicals, meaning they cannot be recycled ends up creating tons of non-biodegradable waste each and every year which is in some timeframe harmful for nature. The hormonal contraception or OCp's comes with its own risk and disadvantages which disturb the normal hormonal balance and in some cases it may even be cancerous. Similarly, the surgical procedures are mostly irreversible hence it is out of our LARC's list. IUD's over the time span lost and gained its popularity. Its market crashed in 90's due to its side effects like PID etc., but the latest one odds out all of this. The latest research of controlled release IUD's may make them the preferred choice of LARCs in coming time as the statistics suggests. Along with IUDs there's a lot of innovative methods being discovered and researched upon like Hormone gels that stop sperm production, Micro-chips remote control implantable, 2 in 1 vaginal rings, **Hormone birth control for men, Redesigned female condom, Controlled-release copper IUD, New patch adhesives etc,. If worked upon this, the current drawbacks of the contraceptive can be eased out and a more sustainable approach can find a possible way.**

Keywords: long-acting reversible contraceptives (LARCs), Intra uterine device, oral contraceptives.

PT/ST4/0036

"Evaluation of Adaptogenic Activity Of Root Extracts Of Asparagus Racemosus"

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Abstract:

The adaptogenic activity of the root extracts of A.racemosus (Asparagaceae) in anoxia stress tolerance, cold restrain stress, swimming endurance, cell mediated immune response, immobilization stress models in rats and mice. Asparagus racemosus. Widely used for lactogenic properties, A. racemosus is also cited in Ayurveda as a nervine tonic. A. racemosus based nutraceuticals have shown to possess adaptogenic, neuroprotective, antioxidant, anti-inflammatory, and nootropic activity under preclinical and clinical settings without posing significant adverse effects. A. racemosus extracts restore the perturbed neurotransmitters and prevent oxidative neuronal damage. Phytochemical investigation on both AQERAR and CERAR revealed the presence of phytoconstituents like alkaloids, glycosides, saponins, carbohydrates, flavonoids, tannins and phenolic compounds, steroids, proteins and amino acids. Toxicity studies LD_{50} were recorded in mice even at the highest dose tested of 2000 mg/kg, p.o. The aqueous extract and chloroform extract of A. racemosus decreased the elevated biochemical parameters like blood glucose, Cholesterol, Triglycerol, blood cell count like, RBC, WBC, DLC, weight of organs like, liver, spleen, adrenal gland, kidney and ulcerogenesis in forced swimming endurance stress model in rats. The adaptogenic activity of chloroform extract at a dose of 400mg/kg of A.racemosus is almost comparable to that of standard W.somnifera 100mg/kg .

Keywords

A.racemosus, root extracts, AQERAR(Aqueous extract), CERAR(Chloroform extract), adaptogenic activity.

PT/ST4/0037

Evaluation of Anticancer Activity Of Esculin In Mice

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Abstract

Human populations are increasingly exposed to various carcinogens such as chemicals, radiation, and viruses in the environment. Chemopreventive drugs of plant origin are a promising strategy for cancer control because they are generally nontoxic or less toxic than synthetic chemopreventive agents.The present investigation was undertaken to explore the anticancer effect of Esculin against skin cancer induced by 7,12-dimethylbenzanthracene (DMBA) and croton (Croton tigilium) oil in Swiss albino mice. The dose selection was made based on acute toxicity studies that was previously reported. In the present study, skin cancer was induced by the application of DMBA (100µg/100µl of acetone) and croton oil (100µl in 1% w/v in acetone) for 16 weeks. Animals were treated both topically and orally with Esculin. Parameters like body weight, cumulative number of tumors, tumor yield, average latent period, histopathological studies and biochemical estimation such as SOD, Catalase, Lipid peroxidation assay were analyzed. The test drug Esculin showed significant anti-cancer effect against DMBA/Croton oil induced skin cancer in mice. There was significant increase in body weight of animals in test groups when compared to disease control group. Cumulative numbers of tumors, tumor yield, average latent period were significantly reduced in treatment groups. The biochemical estimation such as SOD, Catalase and Lipid peroxidation assay showed significant increase in test groups. Histopathological studies are considered as indicative of significant drug activityThe drug Esculin has anticancer activity against DMBA/Croton oil induced skin cancer in mice.

Keywords: Skin cancer; DMBA; Croton oil; Esculin.

PT/ST4/0038

Anti-inflammatory Potential of Syringaldehyde- An In-silico and In-vitro Evaluation

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Abstract

Underlying inflammation is thought to be involved in genesis of various ailments like pain, autoimmune disorders and neurodegenerative diseases. Contemporary research is primarily focused on alleviating underlying inflammatory processes. Bioactive phytochemicals isolated from plants are known to exhibit anti-inflammatory properties and thus have therapeutic potential for treatment of ailments arising out of inflammatory processes. Plants containing phenolic flavonoid Syringaldehyde are known to possess anti-inflammatory activity. In present study, in-silico analysis of Syringaldehyde was conducted and Syringaldehyde was tested in in-vitro cell survival assay, COX-2 inhibition assay and nitric oxide inhibition assay. In-silico studies established that Syringaldehyde has drug-like properties with gastrointestinal absorption and anti-inflammatory potential. In-vitro tests confirmed anti-inflammatory potential of Syringaldehyde. The results indicate anti-inflammatory potential of Syringaldehyde as therapeutic option for treatment of ailments with underlying inflammatory processes. Current results suggest further need to test Syringaldehyde in in-vivo studies to establish its anti-inflammatory utility.

Keywords: Syringaldehyde, In-silico, In-vitro, anti-inflammatory.

PT/ST4/0039

Structural biology paving lights to improve the quality of life

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Abstract

Membrane proteins mediates signal transduction which are also called as secondary messengers or receptors. These Receptors basic function is to facilitate cellular response when triggered with a specific ligand which causes conformational changes in the receptor. The Current researches from academic laboratories are mostly failed at the level of clinical trials as the researcher is lacking knowledge about how the receptor responds to the drug when administered. To overcome such problems structure-based drug design could be the major asset for the drug developmental procedures. The present research was focussed on beta-1, adrenergic receptors to understand the basic structure and their activity when exposed to different lateral pressures. Plasmids (B1AR (insert), BL21DE3 and HEK293(vectors)) were isolated, transformed, ligated and purified. The isolated DNAs were transfected into the HEK 293 cells. cAMP assay was performed were isoprenaline as agonist and propranolol as control and analysed under FLASH phenomena showing significant difference at 2 loops and non-significant difference at loop 3. Lance assay was also performed and tested under FRET phenomena for the 3 loops of the receptor, mutants showed significant difference (0-2000-fold), wild type has shown 5-40-fold significant difference. Western blot method was used to predicts the protein concentration. IPTG a stable form of lactose was used to stimulate the promoter in protein production. Through the research, prominent ideal data was obtained which showed the activity of the B1aR in different lipid environments that could help future researches in identifying its activity and design the drug appropriately using structured based drug design.

Keywords: beta 1 adrenergic receptors, Flash, Fret, western blot, cAMP.

PT/ST4/0040

Evaluation of Analgesic, anti-inflammatory and Anti-arthritic activity of Boswellia serrata Extract.

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Abstract

Osteoarthritis (OA) is degenerative progressive joint disease which mainly affects articular cartilage results in pain and inflammation in major joints especially in knee joints. It is one of the leading causes of disability and affects around 250 million people worldwide. Study was conducted in three parts. In part first protein denaturation inhibition was done. In second part the effect of analgesic effect of Boswellia serrata were studied using hot plate formalin induced pain, and anti-inflammatory activity were studied using currageenan induced paw edema, respectively and in part three in vitro anti-arthritic activity was studied using Monoiodoacetate induced arthritis model. In in-vitro study body weight, paw volume and behavioural parameter was measured at day 0 .7, 14 and 21 day, on day 21 biochemical and histopathological evaluation was done. Various drugs Diclofenac, Celecoxib and Boswellia serrata extract were screened for the anti-arthritic activity using protein denaturation method in which the various drugs showed anti arthritic potential. A dose of BSE (200mg/kg) was more effective by showing improvement in the body weight, reduction of the paw width, reduction of the paw volume, for inflammation in RA. In Liver function test effect of drug on serum glutamate pyruvate transaminase (SCPT) And effect of drug on serum glutamate oxaloacetate transaminase (SGOT) showed the value in reference range. Also, the level of RBCs, WBCs Uric and C-reactive protein was found within standard range. In histopathological finding Diclofenac, Celecoxib and BSE treated groups did not show any pathological significance.

Keywords: Analgesic, anti-inflammatory, antiarthritic activity, Boswellia serrata; Pain & Inflammation

PT/ST4/0041

Evaluation of Pharmacodynamic Interaction Between Phytoconstituent and Antitubercular Drugs in Wistar Rats

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Abstract

Tuberculosis is a severe health issue in Worldwide especially due to development of resistance to the currently used first line and second line Anti-TB drugs. Moreover, the first line drugs like Isoniazide; Rifampicin produces hepatotoxicity restricting their long-term use. The drug with potential Anti-TB activity and having safety still persists. Herbal medicines or phytoconstituents are looked as potential drugs from this perspective. Curcumin from Curcuma longa has proven for various pharmacological activities such as antibacterial, hepatoprotective, anti-inflammatory etc. In this study curcumin is evaluated for its in-vitro Anti-TB activity by the Alamar Blue Assay as well as in-vivo hepatoprotective activity in Rifampicin and INH induced hepatotoxicity in Wistar rats. The physicochemical incompatibility of curcumin with INH was evaluated by measuring RF value using TLC. At concentration of 50 ug /ml curcumin exhibited anti-tubercular acivity in vitro assay. When co-administered with isoniazid for a 28-day treatment period, curcumin at 100mg/kg significantly reduced serum transaminases, alkaline phosphatases, and total bilirubin and histological improvement in liver tissue. When compared to a single drug, the RF result for the curcumin, rifampicin, and isoniazid combination shows no incompatibility. From the results about liver function markers and histology, in-vitro AntiTB assay it is concluded that curcumin can be further explored for its dual Anti-TB & hepatoprotective activity in tuberculosis patients.

Keywords: Curcumin, hepatoprotective, anti-tubercular activity, alamar blue assay.

PT/ST4/0042

Evaluation of Hepatoprotective Activity of Hydroalcoholic Extract of Hyllandia dockrilli [blush Wood Berry] in Wistar Rats

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Abstract

According to a WHO report, the age-standardized death rate from alcohol-related liver cirrhosis is 40% for men and 20% for women. There is no proven drug therapy available for the treatment of Hepatotoxicity caused due to Paracetamol and alcohol. The hydroalcoholic extract of Hyllandia dockrilli belonging to family Euphorbiace where, studied for hepatoprotective activity against Wistar rat induced hepatotoxicity by alcohol and paracetamol. The hydroalcoholic extract of Hyllandia dockrilli at a dose of 100,200,400 mg/kg body weight was evaluated for hepatoprotective activity against paracetamol and alcohol induced hepatotoxicity in Wistar rats. Silymarin is used as standard drug. Alanine aminotransferase, aspartate aminotransferase, oxidative parameter and Histopathology of liver was evaluated. At a dose of 400 mg/kg body weight exhibited moderate protective effect by lowering the liver parameters (ALT, AST,and total Bilirubin). In histopathological findings also revealed that the normal architecture of liver as compared to paracetamol and alcohol induced groups. Herbal extract of Hyllandia dockrilli can be explored as potential hepatoprotective with further molecular studies.

Keywords: Hepatoprotective activity, Hyllandia dockrilli, paracetamol and alcohol

PT/ST4/0043

Evaluation of antidiabetic activity of poly herbal formulation using α-glucosidase inhibition assay

Abstract

Diabetes mellitus is a metabolic disorder characterized by increased glucose levels and decreased insulin levels in the body. Alpha glucosidase enzyme maintains the blood glucose levels in the body. Alpha glucosidase inhibitors are most widely used medications used to treat Diabetes mellitus. Various side effect has also been observed with alpha glucosidase inhibitors such as flatulence, diarrhoea, retinopathy, neuropathy. Therefore, it is essential to decrease the above-mentioned effects. To study in vitro antidiabetic activity of polyherbal formulations and evaluate the % inhibition of α glucosidase enzyme in polyherbal formulation using α-glucosidase inhibition assay kit. Type 2 diabetes mellitus, Alpha glucosidase inhibitors, polyherbal formulations. The α glucosidase enzyme inhibition activity was determined by incubating 1ml of α glucosidase enzyme (1U/ml) solution with 1ml of phosphate buffer (pH 6.8) which contains 1ml of enzyme inhibitor such as sample or acarbose at 37°C for 60 min in maltose solution. To stop the α glucosidase action on maltose the above reaction mixture was kept in boiling water for 2min and cooled. To this 2ml of glucose reagent was added and its absorbance was measured at 540nm to estimate the amount of liberated glucose by the action of α glucosidase enzyme.Alpha-glucosidase inhibitors are used to treat type 2 diabetes that reduces carbohydrate absorption from the gut. Polyherbal formulations are one such alternative treatment which have antidiabetic activity as well as minimizes the risk of side effects associated with convectional medications. Results thus obtained from the study showed reduced glucose levels of test group when compared with normal group. And when the test group was compared with standard group it showed similar results. According to the findings, % inhibition values of polyherbal formulations against α glucosidase enzyme at various concentrations were found to have anti diabetic activity. In this work, the percent inhibition of the glucosidase enzyme was evaluated using a polyherbal formulation of neem, turmeric, and fenugreek, and the in vitro anti-diabetic efficacy was calculated in a systematic fashion to provide probable scientific support. According to the findings of this study, polyherbal formulations have anti-diabetic properties. This activity is due to the test chemical inhibiting the glucosidase enzyme.

PT/ST4/0044

Computational Drug Discovery of Potential Calcium Gene Related Peptide Inhibitors Using In Silico Studies In The Management Of Migraine

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Abstract:

Calcium Gene Related Peptide (CGRP) released from the peripheral nerve ending on the activation of trigeminal nerve. In case of migraine attack, there will be an elevated level of CGRP. The new drug discovery is focused to antagonize the CGRP level. The present study deals with the evaluation of the Calcium Gene Related Peptide inhibitory activity of terpenoids using in silico docking studies. In this perspective, terpenoids like Artecanin, Cadinene, Eudesmol, Farnesene, Gurjunene, Phellandrene, Zingiberene were selected. Sumatriptan, a known CGRP inhibitor was used as the standard. Based on Lamarckian genetic algorithm principle, in-silico docking studies were carried out using AutoDock 4.2. The results showed that all the selected terpenoids showed binding energy ranging between -7.05 kcal/mol to -4.69 kcal/mol when compared with that of the standard (-4.77 kcal/mol). Inhibition constant (6.86 µM to 367.30 µM) and intermolecular energy (-7.05 kcal/mol to -6.48 kcal/mol) of the selected compounds also coincide with the binding energy. From the in silico docking studies, it can be concluded that, Gurjunene showed excellent binding parameters than the selected terpenoids against CGRP inhibitory activity because of its structural parameters. These molecular docking analyses could lead to the further development of Gurjunene as a potent CGRP inhibitor for the treatment of migraine.

Keywords:
Binding energy, Migraine, Inhibition constant, Terpenoids

PT/ST4/0048

Evaluation of Herbal Composite for its Activity against Anticancer drug induced Hepatotoxicity in Wistar rats

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Abstract

Cyclophosphamide (CPA), a cytotoxic alkylating drug is preferred in treating neoplastic disorders. CPA induced organotoxicities is the major constraint in its effective usage. As CYP is primarily metabolized by hepatic microsomal cytochrome p450 hepatotoxicity is one of its most harmful adverse effects. The herbs resveratrol and curcumin are frequently used to treat hepatotoxicity. It is suggested that the herbal composite, which is a special combination of carefully chosen herbs, can help to reduce the side effects of anticancer therapy. In this process, we studied that the dose of curcumin (C100 and C400) treated group C400 showed more significant hepatoprotection as compared to the C100 and in resveratrol (R100 and R400) treated group R400 showed more significant hepatoprotection as comparison to the R100 dose. In comparison to all other treatment groups (C100, R100, R400), the 400 mg/kg body weight dose of curcumin showed a more substantial hepatoprotective effect against CTX-induced hepatotoxicity.

Keywords: Resveratrol, Curcumin, Cyclophosphamide, Hepatotoxicity.

PT/ST4/0050

In Vitro Acetylcholinesterase Inhibitory Activity of Moringa Oleifera Leaves with The Correlation of in Silico Docking Studies of Their Phytoconstituents: A Study Relevant to the Management of Alzheimer's disease

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Abstract

The present study was carried out to look at acetylcholinesterase (AChE) inhibitory properties of the leaves of Moringa oleifera and correlate with in silico docking results of their phytoconstituents. The dried leaves of Moringa oleifera was used to be extracted with purified water by using maceration technique. The resultant was evaluated for AChE inhibitory activity using Ellman's method. The inhibitory profiles of aqueous extract of Moringa oleifera (AEMO) leaves was compared with rivastigmine which is a standard cholinesterase inhibitor. Identification of the phytoconstituents of AEMO was obtained from several literatures. AutoDock 4.2 software was used for in silico docking studies. AEMO considerably inhibited AChE with the inhibition constant values of (IC_{50}) 14.133 ± 0.24 µg/ml in a concentration-dependent manner compared with rivastigmine (29.212± 0.48 µg/ml). In in silico docking studies, the selected phytoconstituents exhibited a commendable binding interaction prevailing with AChE target than the standard. Based on the in vitro and in silico results, apigenin exhibited better concentration-dependant AChE inhibition than the standard rivastigmine. These in vitro analyses and in silico docking studies will be helpful for the development of apigenin as potent AChE inhibitor for the management of Alzheimer's disease.

Keywords: Acetylcholinesterase, Binding energy, Inhibition constant, Moringa oleifera

PT/ST4/0051

Stress management using a combination of bioactive extracts using Swiss albino mice.

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Abstract

Depression is a common, long-lasting, recurrent psychiatric disease with a high lifetime prevalence and high incidence of suicide. One of the common causes of depression is stress and workload in daily life so it is linked to suicide. The signs and symptoms are loss of appetite, mood, decreased fatigability, and loss of confidence that are seen due to alterations in monoamines i.e., norepinephrine and serotonin levels in the brain. The hypothalamus is also affected during stress which controls the release of cortisol which is released due to stress. In literature, Bryophyllum pinnatum possesses anticarcinogenic, antidiabetic, anti-inflammatory, antioxidative, antibacterial, antistress, and antiulcer properties whereas Vaccinium corymbosum possesses mental stress, psychiatric disorders, anxiety disorders, obsessive-compulsive disorders, hysteria, epilepsy and insomnia, and memory loss. The present study was designed to investigate the antidepressant potential of the combination of hydroalcoholic extract of Bryophyllum pinnatum and Vaccinium corymbosum in chronic unpredictable mild stress. Chronic exposure to different stress over 3 weeks leads to a decrease in monoamine neurotransmitters levels, serotonin, norepinephrine, dopamine level, oxidative dysfunction, increased plasma corticosterone and MAO-A level, and increase immobility, and memory impairment as compared to normal. The treatment with a combination of hydroalcoholic extract of Bryophyllum pinnatum and Vaccinium corymbosum at 50, 100, and 200 mg/kg for three weeks significantly improved behavioral alteration, and oxidative damage, decreased corticosterone, MAO-A enzyme as compared to CUMS group. The combination of Bryophyllum pinnatum and Vaccinium corymbosum at a dose of (100 +100 mg/kg) was found more effective than the other two combinations.

Keywords: Chronic unpredictable mild stress, Bryophyllum pinnatum, Vaccinium.

PT/ST4/0053

In Silico And In Vitro Study on Anticancer Property Of Acalypha Indica Linn In Oral Squamous Cell Carcinoma

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Abstract

Oral squamous cell carcinoma (OSCC) is a malignant epithelial neoplasm affecting the oral cavity. Acalypha indica Linn (A. indica) is an annual erect herb which belongs to family Euphorbiaceae has multiple medicinal properties. The main objective of the present study was to evaluate the cytotoxic activity of A. indica using KB oral carcinoma cell line by MTT assay. Identify the phytoconstituent of A. indica which is having high affinity towards oral cancer target Survivin by in silico method. In silico molecular docking study used for all main compounds from A. indica to identify which compounds interact with the target protein survivin (2QFA). The methanolic extract of A. indica (aerial parts) prepared by cold maceration and the crude extract 6.25, 12.5, 25, 50, 100µg/ml were used on KB cell line when compared with control DMSO by MTT assay. Polymerase chain reaction (PCR) were used for expression of protein survivin in KB cell line. In in silico study, Acalyphin amide showed best docking score (G score -6.378) were identified. The crude extract at 100µg/ml have shown more cytotoxic effect in KB cell line by MTT assay and found that down-regulates the expression of survivin protein by PCR. The in vitro study clarifies the anticancer activity of A. indica in OSCC. The results obtained from in silico study, Acalyphin amide can be subjected to further isolation and purification process for the treatment of OSCC.

Key words: Acalypha indica Linn, KB cell line, Survivin.

PT/ST4/0054

"Phytochemical and pharmacological investigation (Antinephrolithiatic Action) of the plant Mimosa pudica Linn."

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Abstract

Mimosa belongs to the taxonomic group Magnoliopsida and family Mimosaseae. In Latin it is called as Mimosa pudica Linn. Ayurveda has declared that its root is bitter, acrid, cooling, vulnerary, alexipharmic. It is used in the treatment of leprosy, dysentery, vaginal and uterine complaints, and inflammations, burning sensation, asthma, leucoderma, fatigue and blood diseases. Decoction of root is used as gargle to reduce toothache. It is very useful in Nephrolithiasis, diarrhea (athisaara), amoebic dysentery (raktaatisaara), bleeding piles and urinary infections. This review gives a brief compilation of its phytochemical and pharmacological activities.Wistar rats were divided in to 15 groups containing six in each. All animals had free access to regular rat chow and drinking water ad libitum. Renal calculi were induced in group II to XV by intraperitoneal injection with 7 mg of sodium oxalate per 100g of body weight in a 0.22M sodium oxalate for 10 days. After administration of sodium oxalate (1hr), group IV, V and X, XI were treated with Petroleum ether extract of Mimosa pudica leaves and roots respectively. Group VI, VII and XII, XIII were treated with Alcoholic extract of Mimosa pudica leaves and roots. Group VIII, IX and XIV, XV were treated with Aqueous extract of Mimosa pudica leaves and roots. On 11th day of the experiment animals were housed in metabolic cages and 6 hours urine samples and serum samples were collected. At the end all the animals were sacrificed, the kidneys were removed and subjected to histopathological study to observe the renal tubular damage caused by deposition of

crystals and increased activity of kidney LDH. The urine and serum samples were used for estimation of biochemical parameters such as urea, uric acid, creatinine, sodium, potassium and chlorides. Urine microscopy was done for all the samples.Crystal deposition as indicated by the presence of crystals in urine, increased blood levels and decreased urinary levels of biochemical parameters such as urea, creatinine.The results obtained, confirmed the beneficiary effect of Mimosa pudica in urolithiasis and justify its use in ayurveda as anti-urolithiatic drug. Further deep research may provide exact mechanism and constituent responsible for pharmacological action.

Keywords: Anti-urolithiatic activity, Mimosa pudica, Sodium oxalate, Hyperoxaluria, Kidney stones.

PT/ST4/0055

An investigation of feronia limonia swingle against experimentally induced inflammatory bowel disease in rats

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Abstract

Inflammatory bowel disease (IBD) is a chronic inflammatory intestinal condition that affect the large and small intestines which is precipitated by a complex interaction of environmental, genetic, and immunoregulatory factors. The study aims to investigate the activity of aqueous extract of Feronia limonia fresh juice (FLFJ) against Indomethacin (Indo) induced enterocolitis in Wistar rats. Methodology involves Experimental model of indomethacin induced enterocolitis. Group I served as normal control, group II served as FLFJ alone, group III served as disease control (Indomethacin 7.5 mg/kg p.o) and group VI served as standard control(sulfasalazine) (100mg/kg p.o). Group IV and V received FLFJ 8 days pre-treatment (250 and 500mg/kg, p.o) with Indomethacin (7.5mg/kg p.o). Later animals were sacrificed, morphological changes were observed and LDH, LPO, MPO, CAT levels were estimated. Results defined administration of indo causes significant decreased levels of CAT in colon specimen. Hence Pre-treatment of FLFJ (250 and 500 mg/kg) in Indo induced enterocolitis showed significantly reduced ulcer score, LDH, LPO, MPO levels and increased the level of CAT. The present data suggests that, the protective effect of FLFJ in IBD induced in animals is due to oxygen free radicals scavenging, antioxidant, anti-inflammatory properties and may be beneficial in patients suffering from IBD.

Key words: Enterocolitis, Ulcerative colitis, Indomethacin, Acetic acid, FLFJ.

PT/ST4/0056

Analysis of serious adverse drug reactions in a tertiary care hospital in central India: a retrospective study

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Abstract

Presently ADRs are the 4th leading cause of mortality in public. Hospital admissions or prolongation due to ADRs are an increasing problem for healthcares. Many cases reported 3-10% hospital admission and increased hospital stay ranges 6-10% due to ADRs. The study is a retrospective analysis of Adverse Drug Reactions (ADRs), which was conceded out from January 2016 to December 2019 in Dept. of Pharmacology, Pt. JNM Medical College, Raipur, Chhattisgarh, India. The study was begun after the consent from Institutional Ethical Committee of Medical College, Raipur. This study includes all the serious ADRs collected at Dr. B.R.A. Memorial Hospital, Raipur, Chhattisgarh. During the four years study period, a total of 762 ADRs were reported. Out of 762 ADRs, 239 (31.36%) ADRs were serious. Out of 239 cases, males share was 113 (47.28%), female 125 (52.30%) and one unknown case was also found related to a preterm baby (neonate) death at the time of study. After causality assessment, the findings were as the major portion of probable (50.60%) followed by possible (41.84%), certain (7.11%) and least unlikely (0.42%). There were 146 (61%) serious cases due to Caused/prolonged hospitalisation and 48 (21%) were due to other medically important condition. In this study 9 (3.77%) cases reported due to death. The present study revealed that 57 (23.84%) serious ADRs were of hospital admission due to an ADR. Our study revealed that out of 426 drugs, 254 suspected drugs, and 172 concomitant drugs had involved in causing Serious ADRs.

PT/ST4/0057

Evaluation of Anti-allergic property of Mulmina TM Juice in In-Vivo models.

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Mulmina TM mango juice is the natural antioxidant – immune booster, containing asiaticoside, Asiatic acid, madecassoside, madecassic acid, curcuminoids, vitamins and zinc etc. used as natural health drink. To investigate the effect of Mulmina TM mango juice for its anti-allergic property by in-vivo models, because its ingredients are promising for anti-allergic activity along with natural antioxidant and immune booster property. The preclinical study on anti-allergic property of Mulmina TM mango juice was performed for Compound 48/80 induced mast cell degranulation in rat mesentery, rat peritoneal fluid, milk induced leucocytosis and eosinophilia in mice and systemic anaphylaxis in mice. Treatment with Mulmina mango juice (21 ml/kg & 42 ml/kg) exhibited significant reduction (&P<0.001 P<0.001) in number of degranulated cells (27.4 ±1.17 & 15.1± 0.54) and the percentage protection was found to be (63.70 & 80.00 %). Showed significant (P<0.001) reduction in number of degranulated cells (23.31 ± 0.88 & 13.53 ± 1.03 respectively). Both the treatment doses showed 73.37% and 84.54 % protection against mast cell degranulation. The group of mice pre-treated with Mulmina mango juice (41 ml/kg and 82 ml/kg) exhibited significant decrease (P<0.001) in leucocytes and eosinophils levels. Oral administration of higher dose of Mulmina mango juice (82 ml/kg) showed 70% protection against mortality. All these findings indicated that Mulmina mango juice exhibited potential anti-allergic property with marked reduction in number of degranulated cells, reduction in antigen (milk) induced immunological reaction by lowering leucocytes and eosinophil count and showed protection against histamine induced anaphylactic shock.

Key words: Mulmina mango juice, allergy, leucocytes, eosinophil, anaphylaxis.

PT/ST4/0061

A Comparative effect of Covaxine & Covishield on Diabetic and Obese Patients

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Abstract

In this study, we aimed to explore the effect of the different covid-19 vaccines on diabetic & obese patients. We have developed a set of questionnaires, which was validated by physicians and pharmacists working in the government medical college (GSVM) Kanpur. We have assessed the Comparison and summarized the results. The study was performed on a group of people between 18-60 years of age who were suffering from diabetes and obesity. After obtaining appropriate consent form CBC TEST was performed for all candidates who were participating in the study. Participants (N= 270) were divided into two groups COVAXIN(CX1) N=135 & COVISHEILD(CD1) N= 135 than vaccinated for DOSE 1. Another call was made to the study after 4 months when both the groups CX1 & CD1 were fully vaccinated. Clinical Survey was performed comparing the antigen-antibody count & immunogenicity of CX1 & CD1 by performing Serology & Antibody titter test for individuals. A total of 220 participants completed the study. As result COVISHEILD was found to be more significant for antibody production in obese and diabetic patients. Our study demonstrates patients with diabetes and obesity tend to have better efficacy of the Covishield vaccine when compared to Co Vaccine. Covishield was found more effective in people with Diabetes and BMI difference following the pandemic where there was no significant difference in antibody titers between people with obesity and healthy individuals after one month.

Keyword: -BMI, Obesity, Sarscov-2, Vaccine, Daibetes.

PT/ST4/0062

Non-invasive Pharmacological Model using Forced Swim Stress Induced Memory Loss for Nootropic activity of Embelia Ribes Burm

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Abstract

The memory loss associated with increased oxidative stress due to increased level of free radicals. The present study aimed to assess the nootropic activity of aqueous extract of Embelia ribes by noninvasive studies using rats. The antistress effect of the aqueous extract of Embelia ribes for 24 h treatment (100 and 300 mg/kg, p.o.) was evaluated by using the forced swim stress test. The urinary excretion of vanillylmandellic acid, 5-hydroxyindoleacetic acid, homovanillic acid and ascorbic acid were determined in all groups under normal and stressed conditions by HPLC and spectrophotometric method. Nootropic activity of Embelia ribes fruit extract was estimated for working memory in rats in a Y-maze apparatus. The data obtained were analyzed by one-way ANOVA followed by tukey test. Administration of aqueous extract of Embelia ribes at a doses in stress induced animals were reduced the urinary metabolite of VMA and 5HIAA while enhanced the HVA and ascorbic acid levels. The treatment with Embelia ribes extracts improved the percentage entry of rats into safer zone, it means acquisition (learning) retention and retrieval (memory) were improved in rats compared to stress controls. The results of this study strongly suggested antistress and nootropic effect of Embelia ribes in rodents. There is substantial evidence that flavonoids play an active role in providing antistress and nootropic activities of Embelia ribes extract. The study provided scientific evidence for their utility as nootropic agents and to advocate their use in foods.

Keywords: Nootropic activity, Embelia ribes, Forced swim test, Y-maze test, non-invasive.

PT/ST4/0063

Cerebroprotective Potential of Aloe emodin Nanoparticles Against Bilateral Common Carotid Artery Occlusion Reperfusion Injury in Rats.

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Abstract

Bilateral Common Carotid Artery Occlusion Reperfusion Injury (BCCAO/R) accelerates neuronal injury through the overproduction of reactive oxygen species due to mitochondrial dysfunction. Aloe emodin has cerebroprotective effects due to its antioxidant and anti-apoptotic nature against oxidative damage caused by BCCAO/R. The blood-brain barrier also limits the Aloe emodin passage into the cerebral region due to its poor bioavailability. Current research involved Aloe emodin nanoparticles preparation, and investigation of their defence against BCCAO/R rats by estimation of cerebral Infarction size, brain biochemical parameters such as GSH, Catalase, SOD, and MDA estimation and histopathology was compared with Aloe emodin. The fabrication method was engaged in the preparing of nano-Aloe emodin, particle size was analysed by using X-ray Powder Diffraction. Aloe emodin nanoparticles were found 68.6 nm size and the particle charge was found to be -53.5mV, electronegative charge on the particle is essential for the particles to remain stable and free from agglomeration hence prepared nanoparticles were found to be of good size and charge. Nano-Aloe emodin treated rats showed significantly increased glutathione ($p < 0.001^{***}$), catalase ($p < 0.01^{**}$), and decreased cerebral infarction size ($p < 0.001^{***}$), and malondialdehyde ($p< 0.001^{***}$) compared with Aloe emodin-treated BCCAO/R rats. Histopathological studies reported that Aloe emodin, Aloe emodin nanoparticles treatment showed restore neuronal cells contact when compared with BCCAO/R rats. In this neuronal intact more in Aloe emodin nanoparticles, when compared with Aloe emodin treatment group. Therefore, Aloe emodin nanoparticles may confer protection to the neurons against ischemic injury compared with Aloe emodin treatment

Keywords: Bilateral Common Carotid Artery Occlusion Reperfusion Injury, Aloe emodin nanoparticles, cerebral Infarction size, catalase, malondialdehyde, glutathione.

PT/ST4/0066

Assessment and quantification of Homovanillic acid and Vanillyl mandelic acid in rodent urine samples using a validated HPLC-UV method.

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Abstract

The purpose of this study was to establish a validated analytical method for estimating the biogenic amines metabolites Vanillyl mandelic acid (VMA) and Homovanillic acid (HVA) simultaneously using the HPLC-UV method.For the analysis of vanillyl mandelic acid (VMA) and homovanillic acid (HVA) in artificial urine samples, an HPLC method was devised and validated. The chromatographic separation was achieved on Kromasil C8, 5µm (125 X 4.6 mm) column at ambient temperature of 25^0C, with mobile phase combination acetonitrile:0.1% ortho-phosphoric acid in ratio of (30:70 v/v) at a flow rate 0.5 mL/min using EZ Chrome lite liquid chromatography, Agilent HPLC system. For the separation of these two metabolites, different mobile phases were used on a trial and error basis. In terms of linearity, accuracy, repeatability, precision, and robustness, the developed technique was validated according to ICH guidelines.A high-resolution HPLC method was devised for the separation of vanillyl mandelic acid and homovanillic acid. VMA and HVA were found to be linear over the concentration range of 10 µg/mL to 35 µg/mL, with coefficients of determination (r^2) of 0.955 and 0.963 for both metabolites, respectively. VMA and HVA had detection limits of 1.7 µg/mL and 1.8 µg/mL, respectively, and quantification limits of 5.2 µg/mL and 5.3 µg/mL. The results showed a low value of % RSD for repeatability, intra and inter-day precision, and robustness studies.A validated HPLC-UV method was developed for estimating Vanillyl mandelic acid and Homovanillic acid in urine samples.

Keywords: Homovanillic acid, Vanillyl mandelic acid, HPLC-UV, method validation etc.

PT/ST4/0067

Diabetes and the importance of insulin

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Abstract:
Diabetes mellitus is a collection of metabolic illnesses marked by chronic hyperglycemia caused by insulin production, insulin action, or both. Insulin is secreted in pancreatic beta cells. Insulin deficiency produces a rise in blood glucose levels, causing problems with carbohydrate, lipid, and protein metabolism. With the progression of the condition, tissue or vascular damage occurs, resulting in severe diabetes consequences such as retinopathy, neuropathy, nephropathy, cardiovascular problems, and ulceration.Without any comprehensive preventive and control measures, the worldwide prevalence of diabetes would continue to rise. Diabetes can be controlled non-pharmacologically by diet and exercise or pharmacologically by oral hypoglycemic agents and insulin. Insulin therapy is more effective in managing DM and is preferred in case of emergency hyperglycemic conditions. Moreover, Insulin's physiological function and clinical significance are often associated with its involvement in glucose homeostasis. Several types of insulin have shown effective results in the management of DM. Insulin pen devices provide several benefits over the classic insulin bottle and syringe technique. Insulin pumps have been offered as an alternative to traditional insulin injections for the management of type 1 diabetes mellitus patients.Thus it is safe and efficient in the treatment of diabetes mellitus (DM).

Key Words: Diabetes, Insulin, neuropathy, nephropathy.

PT/ST4/0069

Modified vaccinia ankara vaccine for monkeypox

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Abstract

A zoonotic ortho pox virus called human monkey pox has symptoms that resemble smallpox. When people come into contact with diseased animals, they may unintentionally contract monkey pox. The incubation period of 6 to 13days Although supportive care is usually sufficient for the majority of instances of monkey pox, which have mild and self-limiting disease, there are anti-viral (such as cidofovir, tecovirimat) that can be used as treatments. To better understand and prevent human infections, additional study is required on the epidemiology, ecology and biology of the virus in endemic. Antiviral should be taken into account in cases of severe illness, immune suppressed individuals, children, pregnant and nursing women, complicated lesions. Though additional research is required before they can be used in an endemic situation, new medicines and vaccinations provide hope for the treatment and prevention of monkey pox. Most mammalian cells cannot replicate Modified Vaccinia virus. So, it is a safe and well-studied vaccine vector. This Vaccine Have Non-Specific Effect That Provide Protection from Illness Other Than their intended Infection Target. The Recombinant Strain of modified Vaccinia Ankara are used as alternative vaccine for tuberculosis by boosting the immunity brought on by BCG. When compared to currently existing smallpox vaccines, smallpox vaccination with replication-deficient vaccinia strains such as Modified Vaccinia Ankara (MVA), may generate protective immunity with improved safety and acceptability characteristics. Here we show that MVA elicits faster immunological response after a single shot than the officially approved Dryvax vaccine. The MVA vaccinated group had generally greater virus load and skin lesion count. So, the maximum dose of MVA tolerated safely.

Keywords: Monkey Pox, Recombinant Strain, Non-Specific Effect.

PT/ST4/0071

Investigation of Endogenous Agmatinergic Pathway in Ethanol Withdrawal Induced Seizures in Rats

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Abstract

Ethanol is a psychoactive substance and it is usually acts in the brain like a depressant drug, consequently increasing the seizure threshold. With repeated detoxifications, the risk of alcohol withdrawal seizures increases, and the severity of alcohol withdrawal symptoms gradually worsens over years of alcohol dependence. The present study investigated the role of the agmatinergic system in ethanol withdrawal-induced audiogenic seizures in rats. Different concentration of ethanol was given to the rats by oral gavage for 7 days and its abrupt withdrawal (10-12 hr of last ethanol exposure) produced seizure, as evidenced by increased seizure score, compared to the control animals. Since ethanol withdrawal seizures is known to produce oxidative stress and inflammation as well as alterations in neurotransmitters level, we monitored the lipid peroxidation, nitrite, reduced glutathione and catalase, proinflammatory cytokines like IL-1β, IL-6, and TNF-α as well as GABA and glutamate neurotransmitters level in ethanol withdrawal induced seizure rats and its modulation by agmatine and agmatinergic agents. In the present study, ethanol withdrawal-induced seizure was significantly attenuated by agmatine (40-80 mg/kg, i.p.), L-arginine (100 mg/kg, i.p.), aminoguanidine (50 mg/kg, i.p.), arcaine (30 mg/ kg, i.p.). It was found that agmatine and its modulators decreases the elevated glutamate level and increases GABA level in ethanol withdrawal induced seizure rats. An elevated oxidative stress and proinflammatory cytokines level were also significantly reduces by agmatine and agmatinergic agents. These data suggest that agmatine is a potential therapeutic target for ethanol withdrawal-induced seizures.

Keywords: Agmatine, ethanol withdrawal, audiogenic seizure, oxidative stress, neuroinflammation

PT/ST4/0073

Evaluation Of Antiulcer Property Of Delonix regia; An Experimental Study On Haematological And Biochemical Analysis

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Abstract: Delonix regia is a species of flowering plant in the bean family Fabaceae, subfamily Caesalpinioideae native to Madagascar. To evaluate the antiulcer property of delonix regia, an study on haematological and biochemical analysis. Preliminary phytochemical studies on the selected plants, evaluation of acute and sub-chronic toxicity of extract obtained from delonix regia, evaluation of extract obtained from delonix regia as antiulcer activity. Estimation of ethanolic induced gastric ulcers in rats, gastric mucosal wall content followed by measurement of ulcer intensity score and ulcer index followed by dunnett's test using graphpad prism 5.0. Since administration of 1 ml of absolute ethanol in rats caused severe gastric damage with hemorrhage. Effect of EDR on gastric wall mucus content in normal control group is 0.196 and ethanol method control group is 0.07. Haematological analysis, in male rats the red blood cells were significantly increased, in female rats there is an increase in corpuscular volume. There was a decrease in mucus content (63.27%) in untreated ethanol control rats. EDR was found to significantly increase the level of gastric wall mucus content (141.6%) against ethanol induced gastric ulcer model in rats. The effective protections afforded to the gastric mucosa by the rein- forcement of gastric mucosal barrier against its own peptic secretions.

Key Words : Antiulcer, Delonix regia,

PT/ST4/0074

To investigate the in-vivo anti diabetic effect of active extract Morindacitrifolialinn. in Streptozotocin induced diabetic wistar albino rats compared with standard drug Glibenclamide.

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Abstract

The study was carried out to identify the diabetic agents causing diabetes, evaluate the in-vivo anti diabetic effect of active extract of Moriandacitrifolialinn to the wistar albino rats. This contain very rich nutrients and has many pharmacological effects like antibacterial, analgesic activity etc.. The extract was done by the content was wetted with ethanol (99.9%v/v) and then poured until the siphon tube was filled. It was subjected to preliminary phytochemical studies to detect the plant constituents. Diabetes was induced by intra- peritoneal injection of streptozotocin 50mg/kg body weight. The rats are compared by which received distilled waters induced served as diabetic control, received standard drug which was Glibenclamide,STZ induced rat with EEMC. The result was calculate by effect of ethanolic extract of Moriandacitrifolialinn on body weight in STZ induced diabetes rats and also on Whole blood glucose in STZ induced diabetes rats. The observations confirm that ethanolic extract of the bark of Morindacitrifolia plant has Antidiabetic activity.

Keywords: Morindacitrifolialinn.,streptozotocin, antidiabetic effect,ethanolicextract.

PT/ST4/0075

Evaluation Of In Vitro Anti-Inflammatory Activity Of Ethanolic Extract Of Morus Alba L. Root Bark

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Abstract

Morus alba L., is also know as white mulberry, has long been used in traditional medicines. This study was aimed to investigate antiinflammatory activities of ethanolic extract of root bark. Leukotrienes (LTs) are 5-lipoxygenase derives eicosanoids involved in anaphylactic and hypersensitivity reactions. And the lipoxygenase (LOX) is a kind of rate limiting enzyme in the process of arachirionic acid metabolism into leukotriene (LT). The inhibition of LOX can reduce leukotriene thereby producing an anti-inflammatory activity. Ethanolic extract of root bark of morus alba(mulberry) was prepared by extractions cold maceration process. The anti-inflammatory activity was investigated by inhibition of 5(LOX) enzyme and 12(LOX) lipoxygenase enzyme. And the enzyme is preventing the conversion of linoleic acid to 5-hydroperoxylinoleic acid and 12-hydroperoxylinoleic acid. And the absorbance are also measured. Root extract was found to contain flavonoid, glycosides, and tannis. Based on the various in vitro methods carried out, it can be concluded that root bark of moris alba linn, possess anti-inflammatory activity.

Keywords: Morus alba L.Antiinflammatory,Leukotriene,Ethanol, Root bark

PT/ST4/0076

Chronic Agmatine treatment prevents behavioral and biochemical manifestation of Quinolinic acid induced Huntington's Disease in Rats

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Abstract

Huntington's disease (HD) is an inherited, progressive neurodegenerative disorder characterized by motor incoordination, cognitive impairment, and neuropsychiatric symptoms. Unfortunately, no disease-modifying medications are available that can stop or even mitigate this fatal disease. Agmatine, an endogenous polyamine, exhibits a wide spectrum of biological actions and demonstrated great therapeutic potential in various neurodegenerative disorders. Therefore, the present study was designed to elucidate the therapeutic effect of agmatine in quinolinic acid (QA) induced HD in rats. HD was induced by central QA injection in rats. We investigated the impact of intra-peritoneal agmatine injections (20 and 40 mg/kg/rat) on behavioral and biochemical dysregulation induced by QA (300 nmol/4µL, icv) in rats. Rats treated with QA demonstrated a distinct phenotype including motor incoordination, cognitive decline, and anxiety-like behavior. Moreover, QA at this dose level increased oxidative stress including lipid peroxidation and depletion of endogenous antioxidant defense. Chronic treatment of agmatine attenuated QAinduced symptoms of HD including motor incoordination, cognitive impairment, and significantly improve the oxidative stress parameters. Our data project agmatine-based therapies as a novel treatment approach for the management of HD. Agmatine has enormous potential for the treatment of neurodegenerative illnesses owing to its safety profile.

Keywords: Huntington's Disease, Neuropsychiatric symptoms, Agmatine, Quinolinic acid.

PT/ST4/0077

Agmatine Attenuates Ethanol Induced Failure of Adaptation to Repeated Restrain Stress in Rats

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ABSTRACT

Adaptation to a repeated restraint stress schedule was monitored in ethanol-treated and control rats. We know that excessive ethanol consumption impair the adaptation to stress and thus conceivably precipitate depression. In the present study, we assessed the effect of agmatine in ethanol induced failure of adaptation to repeated restrain stressed rats. Ethanol was added in the drinking water for 2 weeks, in of 5% (v/v) for the initial 2 days, 7% (v/v) for the following 2 days and 10% (v/v) for the remainder of the experimental period. Agmatine (10, 20 & 40 mg/kg, i.p.) were given in ethanol treated rats. Daily 2 h restrain stress were given to the rats. Food intake, fluid intake and body weight of rats were monitored weekly. Ethanol-treated rats, exhibited decreased food intake after 5th daily restraint of 2 h per day. Food intakes were significantly decreased in ethanol treated restrained stress rats. Agmatine improve the daily food consumption in ethanol treated rats. Open-field ambulatory activities monitored 24 h after the 5th daily restraint rats. Ethanol-treated restrained rats exhibited decreased in locomotor activity than control restrained or ethanol-treated unrestrained rats. Agmatine treated rats increased the locomotor activity in ethanol treated restrain rats. These data suggested that Agmatine (40 mg/kg, i.p.) improved the impair adaptation to stress occured in ethanol treated rats.

Keywords: ethanol, restrain stress, agmatine, depression

PT/ST4/0078

Withania Somnifera Attenuate the cross tolerance of Ethanol and Nicotine

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ABSTRACT:

Adaptogens are herbal medications that can be used as a potential therapeutic target for drug addiction. Withania somnifera (Ashwagandha) is one of the adaptogens having great medicinal value and is used in many clinically proven neuronal conditions. In the present study, we investigate the effects of Withania somnifera extract and its phytoconstituents on alcohol and nicotine cross-tolerance effects in the Swiss albino mice model. Exposure of mice to 4-day daily treatment with ethanol or nicotine and on the 5th day, assessment of tolerance with the same dose of alcohol or nicotine followed by a withdrawal period assessment of cross-tolerance with a single dose of nicotine to ethanol treated mice and ethanol to nicotine treated mice. Behavioral paradigms were assessed through EPM, OFT, and body temperature measurement. We observed that a group of animals receiving 4 days of daily alcohol and assessment of tolerance to the same dose on the 5th day showed development of tolerance to anxiety-like behavior, but locomotor parameters were not affected significantly. The development of cross-tolerance in a group of mice receiving a single anxiogenic dose of nicotine followed by ethanol consumption and withdrawal in EPM. The pre-treatment of WSE and its phytoconstituents before the nicotine challenge attenuates the anxiogenic effect of nicotine as revealed by an increase in OA entries in EPM. Also, a significant decrease in ACTH level was observed. These results suggest that WSE may serve as an effective adaptogen in arresting ethanol and nicotine mediated tolerance to cross-tolerance effects and attenuating anxiety and stress levels. The above data indicate that Withania somnifera attenuate the cross tolerance of ethanol and nicotine.

Keywords: Withania Somnifera, Alcohol-Nicotine, Cross Tolerance, Drug Addiction, Anxiety.

PT/ST4/0079

Role of Agmatine in Autism Spectrum Disorder in Rats

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ABSTRACT:

Autism spectrum disorder (ASD) is a heterogenous neurodevelopmental disorder characterized by core behavioral symptoms including impaired social communication, repetitive behaviors and various neuropsychiatric symptoms. Unfortunately, due to less known pathophysiology and molecular targets, the effective treatment for ASD is not yet available. Agmatine, an endogenous polyamine, neuroprotective agent and NMDA receptor antagonist, exhibits a wide spectrum of biological actions and demonstrated great potential as a novel therapeutic candidate in various neuropsychiatric disorder. Therefore, the present study was designed to reveal the therapeutic effect of agmatine in propionic acid (PPA) induced ASD in rats. ASD was induced by PPA administration in rats. We investigated the influence of intra-peritoneal agmatine injections (20, 40 and 80 mg /kg) on behavioral dysregulation induced by PPA (250 mg/kg, p.o) in rats. Furthermore, we have also investigated the effects of intra-peritoneal injections of agmatinergic modulators L-arginine (50 mg/kg) & Aminoguanidine (60 mg/kg) in autism induced rats. Rats treated with PPA demonstrated altered phenotypes, as social impairment, lowered exploratory behavior, anxiety and repetitive behaviors. Moreover, PPA was also found to cause alteration in neurochemical and biochemical levels. We found that chronic treatment of agmatine and agmatinergic modulators attenuate PPA induced symptoms of ASD including social impairment, anxiety, repetitive behaviors and also shown significant improvement in neurochemical and biochemical parameters. Our data, in particular, project that agmatine based therapies might be used as novel treatment strategy in the management of ASD.

Keywords: Autism spectrum disorder, Agmatine, Propionic acid

PT/ST4/0080

Recent Advances In The Treatment Of Colorectal Carcinoma With Dostarlimab-A Review

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ABSTRACT:

Colorectal carcinoma is a cancer, or malignant tumor, of the large intestine, which may affect the colon or rectum. Approximately 5 to 10% of rectal adenocarcinomas are mismatch-repair deficient, and these tumours have been shown to respond poorly to standard chemotherapy regimens, including neoadjuvant chemotherapy in locally advanced rectal cancer, with the complications and toxic effects including bowel, urinary, and sexual dysfunction; infertility; and altered quality of life. While on the clinical trials, 12-14 Immune checkpoint blockade alone has been shown to be highly effective as first-line treatment for patients with mismatch repair–deficient metastatic colorectal cancer, as well as for patients with treatment-refractory disease, with objective response rates of 33 to 55%, clinically significant durability of response, and prolonged overall survival. Thus based on the benefits it is hypothesized that single-agent programmed death-1 (PD-1) blockade alone might be beneficial in mismatch repair–deficient, locally advanced rectal cancer and to test that hypothesis a phase 2 study was initiated to investigate the overall response and frequency of sustained clinical complete response to neoadjuvant treatment, in this patient population, with Dostarlimab, a PD-1 inhibitor, monoclonal antibody approved for medical use in the United States and the European Union in April 2021 and Dostarlimab is indicated for the treatment of adult patients with mismatch repair deficient (dMMR) recurrent or advanced endometrial cancer that has progressed despite ongoing or prior treatment with a platinum-containing chemotherapy regimen. So, based on recent advances, treatment with Dostarlimab in patients with locally advanced rectal cancer is highly beneficial, and more research studies are required to determine the drug's efficacy in various stages.

Keywords: Dostarlimab, Rectal cancer, PD - 1 blockade, monoclonal antibodies, recent advances in rectal carcinoma.

PT/ST4/0081

Evaluation of oxytocin – agmatine neuropharmacological interaction in premenstrual dysphoric disorder in rats

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Abstract:

Premenstrual dysphoric disorder (PMDD) is a severe form of PMS that includes physical and behavioural symptoms that usually resolve with the onset of menstruation.Aim and Objective: In the present study we investigated the neuropharmacological interaction of agmatine and oxytocin in progesterone withdrawal-induced PMDD.Methods: Administration of progesterone twice daily for 7 days followed by finasteride on the 8th day caused an abrupt decline in its metabolite allopregnanolone which leads to the onset of symptoms associated with PMDD. The progesterone withdrawal-induced anxiety and hyperalgesia were significantly attenuated by agmatine (10 & 20 mg/kg, i.p.), while oxytocin (0.25ml & 0.5ml/rat, i.p.) significantly decreased anxiety by their once-daily administration from day 4 – day 7 of the protocol. In a combination dose study agmatine (5 mg/kg, i.p.) and oxytocin (0.125ml/rat, i.p.) significantly attenuated both anxiety and hyperalgesia associated with progesterone withdrawal. We have also analyzed the daily food intake of animals and serum progesterone levels in progesterone withdrawn rats. There was a significant decline in food intake and serum progesterone level in progesterone withdrawn rats as compared to control animals which were significantly restored by both individual and combination doses of agmatine and oxytocin.Conclusion: The present study suggests the importance of agmatine and oxytocin and their neuropharmacological interaction in progesterone withdrawal-induced PMDD. The data also projects them as a potential therapeutic target for the premenstrual dysphoric disorder.

Keywords: Agmatine; Oxytocin; Anxiety; Hyperalgesia Premenstrual Dysphoric Disorder.

PT/ST4/0082

Involvement of Neurosteroid Allopregnanolone in agmatine Induced Modulation of Premenstrual Dysphori

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ABSTRACT: Premenstrual dysphoric disorder (PMDD) is a severe and disabling form of Premenstrual syndromes (PMS) characterized by mood changes, anxiety, and somatic symptoms experienced during the specific time of menstrual cycle. It is a potent positive allosteric modulator of the GABA-A receptor. Agmatine a putative neurotransmitter/neuromodulator, has the ability to promote a variety of pharmacological and biological activities including action on NMDA-ca2+-NOS pathway and VGCC in the brain (neuroprotection). To study the involvement of neurotropic allopregnanolone in in agmatine induced modulation of PMDD in rats. Sprague-Dawley female rats are injected with progesterone (50 mg/kg, s.c.) twice daily at 9 am and 6 pm. On day 7 after progesterone administration, female rats received an injection of finasteride and after 24 h (on day 8), animals were tested for anxiety and nociception. Finasteride treatment decreased brain allopregnanolone levels but had no effect on brain progesterone. Animals received exogenous allopregnanolone (0.125, 0.25 and 0.5 mg/kg, s.c.) and agmatine (5, 10 and 20 mg/kg, i.p.) 15 min before finasteride injection from day 4–7.Allopregnanolone treatment at a dose of (0.5 mg/kg) and agmatine treatment on dose (10 and 20 mg/kg) shows antianxiety activity and agmatine on 20mg/kg produce antinociceptive activity. Allopregnanolone and agmatine at above doses also increased food intake. This indicated that allopregnanolone and agmatine might play a role in PMDD associated anxiety and can be a further area of investigation for PMDD drug development.

Keywords: Agmatine; Allopregnanolone; PMDD; Finasteride; Progesterone.

PT/ST4/0083

Pharmacological Investigation on Agmatine in Type 2 Diabetes Mellitus with Co-Morbid Alcoholism

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ABSTRACT: Introduction: Chronic, heavy alcohol consumption is risk factor for type 2 diabetes mellitus (T2DM), it disturbs the glucose homeostasis and is associated with the development of insulin resistance, obesity, induction of pancreatitis and impairment of liver function. Although agmatine have been widely used in the treatment of T2DM and alcoholism precise mechanism of its hypoglycaemic action is poorly understood. To establish and assess animal model for diabetic with co-morbid alcoholism and study the pharmacological effect of agmatine in T2DM with co-morbid alcoholism through biochemical evaluation The alcohol-induced type two diabetes mellitus group rats were fed with Liquid Modified Diet (LMD) + ethanol (EtOH) over 3 weeks with HFD with a low dose of streptozotocin (35 mg/kg) on day 14. Other groups are fed with respective HFD or LMD or normal diet. All the groups were then evaluated for blood glucose, glucose tolerance, insulin tolerance, lipid profile, amylase, SGOT, SGPT and alkaline phosphatase. Histopathologic ally liver and pancreatic morphology comparison was also performed. Antidiabetic action of agmatine (40, 80 mg/kg, i.p.) was indicated by lowering in elevated blood glucose, cholesterol and triglyceride level in diabetic rats and also in alcohol induced diabetic rat. also shows the beneficial effect on the liver enzyme profile and normalized SGOT, SGPT, ALP, amylase level. This study thus establishes the animal model of T2DM with co-existing alcoholism and also highlights evidentially the potential of agmatine in the management of diabetes in alcoholic subjects.

Keywords: T2DM. Alcoholism, Agmatine

PT/ST4/0084

An overview on aquagenic syringeal acrokeratoderma

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ABSTRACT: The aquagenic syringeal acrokeratoderma (ASA) is a rare disease that typically affects the palms and frequently linked with cystic fibrosis, ASA is an uncommon skin disorder that causes the palms to wrinkle disproportionately and develop oedematous colourless, yellow, or whitish plaques or lesions and enlarged pores after coming into contact with water. Skin lesions are typically accompanied by itching and burning sensations. The aetiology of ASA is unclear but however some of the evidences were implicated that includes, The COVID-19 epidemic's heightened personal hygiene measures, such as wearing personal protective equipment, repeated hand washing, and decontamination and non-steroidal anti-inflammatory drug use may have contributed to the ASA pathogenesis. According to a histopathologic analysis, the epidermis exhibited hyperkeratosis, acanthosis, and dilated eccrine ducts. Treatment options are aluminium chloride solution, injections of botulinum toxin, iontophoresis, antihistamines, salicylic acid, a composition of mometasone furoate and petroleum jelly, and a lotion containing urea. This review illustrates on the etiopathogenesis, diagnosis and therapy of aquagenic syringeal acrokeratoderma.

key words: Aquagenic syringeal acrokeratoderma, hyperkeratosis, Cystic fibrosis, COVID-19, Nonsteroidal anti-inflammatory agents.

PT/ST4/0085

Involvement of Agmatine in Chronic Unpredictable Mild Stress Induced Dysregulation of Gut-Brain-Axis in Rats

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Chronic unpredictable mild stress (CUMS), in addition to causing depressive-like symptoms, also alter the gut microbiome composition (Dysbiosis) and agmatine level. Regulating the microflora by administering probiotics produced antidepressant-like effect. Considering the drawbacks of existing pharmacological approaches to treat depression, the microbiota-gut-brain-axis is an emerging focus for treatment. Agmatine is a novel neurotransmitter present in brain as well as gut and it is dysregulated in depressed condition. Present study investigated the effect of agmatine on CUMS induced dysbiosis and other behavioral and biochemical parameters. Different stressors were given in CUMS paradigm for 28 days. We administered Agmatine intraperitoneally and probiotics orally and their combinations to rats from day 15 onwards to CUMS exposed animals and evaluated the different parameters in sucrose preference test (SPT), forced swim test (FST) and open field test (OFT) along with the composition of the Lactic acid bacteria and Escherichia coli species and biochemical parameters. Exposure to chronic stress caused dysbiosis indicated by decrease in Lactic acid bacteria and increased in E. coli concentration in fecal matter of rats as compare with control. CUMS caused anhedonia indicated by reduced sucrose intake in SPT and reduced immobility time in FST. Agmatine and probiotics alone and in combination ameliorated depressive-like behavior induced by CUMS in all the above-mentioned paradigms including microbial and biochemical parameters. These results suggest that agmatine and probiotics may play an important role in restoration of dysregulated gut microbiota in CUMS induced depression by regulating the gut microbiome composition.

Keywords: *CUMS, Depression, Gut-Brain-Axis, Agmatine, Probiotics*

PT/ST4/0086

Non-invasive Pharmacological Model using Forced Swim Stress Induced Memory Loss for Nootropic activity of Embelia Ribes Burm

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ABSTRACT: The memory loss associated with increased oxidative stress due to increased level of free radicals. The present study aimed to assess the nootropic activity of aqueous extract of Embelia ribes by non-invasive studies using rats. The antistress effect of the aqueous extract of Embelia ribes for 24 h treatment (100 and 300 mg/kg, p.o.) was evaluated by using the forced swim stress test. The urinary excretion of vanillylmandellic acid, 5-hydroxyindoleacetic acid, homovanillic acid and ascorbic acid were determined in all groups under normal and stressed conditions by HPLC and spectrophotometric method. Nootropic activity of Embelia ribes fruit extract was estimated for working memory in rats in a Y-maze apparatus. The data obtained were analyzed by one-way ANOVA followed by tukey test. Administration of aqueous extract of Embelia ribes at a doses in stress induced animals were reduced the urinary metabolite of VMA and 5HIAA while enhanced the HVA and ascorbic acid levels. The treatment with Embelia ribes extracts improved the percentage entry of rats into safer zone, it means acquisition (learning) retention and retrieval (memory) were improved in rats compared to stress controls. The results of this study strongly suggested antistress and nootropic effect of Embelia ribes in rodents. There is substantial evidence that flavonoids play an active role in providing antistress and nootropic activities of Embelia ribes extract. The study provided scientific evidence for their utility as nootropic agents and to advocate their use in foods.

Keywords: Nootropic activity, Embelia ribes, Forced swim test, Y-maze test, non-invasive.

PT/ST4/0087

Exposure to environmental enrichment restores cognitive deficits in chronically stressed male rats

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Abstract: Repeated stress has been implicated in the pathogenesis of diverse diseases, which ranges from anxiety, depression, posttraumatic stress disorder, and cognitive dysfunction. Exposure to prolonged stress results in structural and functional alterations in the hippocampus. However, not many studies have looked into the possible ways of reversing stress -induced deficits. Enriched environment (EE), which provides increased sensory and social interactions and showed beneficial effects on cognitive functions. However, the role of EE in chronic stress assocaited cognitive dysfucntions remains unknown. In this study, we investigated the possible neuroprotective effect of EE on stress-induced behavioural defiicts. The animals subjected to chronic immobilization stress (CIS) for 2h/day for 10 days.The stressed animals then exposed to EE for 6 h/day for 14 days. All groups were subjected to T-maze, Novel object recognition test, open field test, elevated plus maze, sucrose preference test and force swimming test. Chronic stress increased anxiety, depressive behavior and impaired memory. Interestingly, EE restored anxiety, depression and memory. Our data highlight the positive impact of EE against stress-related behavioral changes in rats exposed to chronic immobilization stress. The underlying mechanism remains to be explored in further detail. These results further reinforce the notion that the progressive neuroplastic effect of EE in neurodegenerative disorders including chronic stress.

Keywords: Enrichment environment, anxiety/depressive, chronic immobilization stress,,and cognitive impairment.

PT/ST4/0088

Role of Agmatine in Chronic Fatigue Syndrome in Rats: Involvement of Gut-Brain-Axis

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Abstract: The chronic fatigue syndrome (CFS) is characterized by extreme fatigue, myalgia, GI disturbances, depression and cognitive dysfunction. Agmatine is a poly-amine act as a neurotransmitter in the brain having multi-receptorial activity and play an important role in maintaining homeostasis by regulating the HPA axis. The alteration in the gut microbes may lead to altered communication between brain and gut through gut-brain-axis that lead to CFS. The present study was designed to study the effect of agmatine on CFS and dysregulation of gut microbiota associated with CFS in rats. CFS was induced in rats by combined use of stressors such as weight loaded forced swimming test and restraint stress (to produce physical and mental stress) for 28 days. Each day animal groups were administered with Agmatine/Probiotics and combination of their sub-effective doses. Subsequently, animal groups were evaluated for behavioral assessment by using post swim fatigue test, Novel Object Recognition, balance beam walking, open field test and tail suspension test. Biochemical and microbial estimation were done of each group. The induced CFS like conditions were improved with long-term treatment of agmatine (10 and 20 mg/kg, IP), probiotics (2ml/rat, oral) and their combination. Also, agmatine and probiotics treatment normalize the altered gut lactic acid bacteria and E. coli concentration and biochemical paramerets, responsible for beneficial effect in CFS-like conditions. The behavioral assessment in this study provides functional pieces of evidence for the therapeutic potential of Agmatine, Probiotics and combination as alternative therapeutic strategies to treat CFS like condition and related dysbiosis.

Keywords: Chronic Fatigue Syndrome, Gut-Brain-Axis, Agmatine, Probiotics, Lactobacillus.

PT/ST4/0089

Agmatine: a potential regulator of dysregulated Gut-Brain-Axis in Alzheimer's Disease

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ABSTRACT: Alzheimer's disease (AD) is a progressive, multifaceted disease characterized by neurodegeneration, dysbiosis (altered gut microbiome composition) and dysregulated agmatine level. Gut-brain-axis (GBA) has pivotal role in regulating neuronal functions. Agmatine, a novel neuro-modulator/transmitter, exerts multiple effects on the CNS including neuroprotection, richly present in gut secreted by microbes. To evaluate the effect of agmatine on dysregulated GBA in AD, and to explore the endogenous agmatinergic pathway in modulation of GBA.AD was induced by single injection of streptozotocin (STZ) (3 mg/kg, ICV). Agmatine and probiotics were administered consecutively for 21 days to evaluate their effect on dysbiosis and AD-associated behavioural alterations. Microbial estimation was performed for Lactobacillus spp. (Beneficial microbe) and E. coli (Pathogenic microbe) in suitable media. Neurochemical parameters were estimated in brain tissues to assess oxidative stress associated with AD.STZ treatment produced AD-like pathologies in mice behaviorally, induced dysbiosis, and reduced endogenous antioxidants like Glutathione and Catalase whereas increased Oxidative stress mediators: Nitrite and MDA. Agmatine, Probiotic mixture, alone and in Sub-effective combination significantly attenuated depressive-like behavior as evidenced by decreased immobility time in Force Swim Test, produced an anxiolytic effect in Elevated Plus Maze and improved cognitive function in the Morris water maze and Novel object recognition and restored dysregulated gut microbiome by increasing beneficial bacteria and reducing harmful bacteria. This treatment also reversed the neurochemical alteration in the brain by increasing anti-oxidants and reducing oxidative stress mediators.In conclusion, this study offers novel insights into modulation of the GBA by Agmatine and its combination with probiotics for treatment of AD.

Keywords: Alzheimer's Disease, Gut-Brain-Axis, Agmatine, Probiotics, Lactobacillus.

PT/ST4/0091

Screening of plant based mTOR inhibitors for the treatment of Parkinson's disease an In silico Approach

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ABSTRACT:mTOR (mammalian target of rapamycin) regulates autophagy, cytoskeletal reorganization, protein synthesis, nucleotide synthesis, etc. There are two complexes mTORc1 and mTORc2. mTOR promotes protein synthesis and down-regulation of autophagy occurs causing accumulation of α-synuclein in neuronal cells, leading to the formation of Lewy bodies and therefore interfering conduction of neuronal impulse. Rapamycin has a more efficient inhibitory action on mTORc1 than on mTORc2. It's observed that mTORc1 has a characteristic role in neuronal cells towards Parkinson's Disease. Phytochemicals were studied for its inhibitory action on mTOR protein by comparing binding energy and IC50 value after performing docking. The main aim of this study was to find out the mTOR inhibiting potential of phytochemicals through docking. Docking was performed with Biovia Discoveryudio 2019 version. It allows the prediction of molecular interactions that hold together a protein and ligands in the bound state. The protein (5GPG) structure was obtained from PDB and 25 ligand structures were obtained from PubChem. The molecular interaction was studied. Docking was performed between 25 phytochemicals and mTOR protein (PDB id: - 5GPG) and the 5 most potent mTOR inhibitors were found. Based on the docking studies Butein, Apigenin, Arctigenin, Capsaicin, and Fucoidan were found to have high interactions with mTOR protein. These phytochemicals can be the potential candidates for further screening of mTOR inhibitor activity in in-vitro studies.

Keywords: Parkinson's disease, mTOR, Phytochemical, α-synuclein, lewy bodies.

PT/ST4/0094

Involvement of Agmatinergic System in Conditioned Fear Response in Rats Model of Post-Traumatic Stress

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ABSTRACT: Post-traumatic stress disorder (PTSD), is a severe anxiety disorder characterized by associative fear conditioning. Single prolonged stress (SPS) is a widely accepted reliable animal model to stimulate PTSD. The aim is to study involvement of agmatinergic system in conditioned fear response in rat model of post-traumatic stress disorder. Agmatine is an endogenous neuromodulator of stress; however, its effect on PTSD remains to be investigated. This study explored role of agmatine in conditioned fear response (CFR) in PTSD and highlighted how imidazoline receptors contribute to effect of agmatine. Intra-cerebroventricular (icv) surgery was done in order to facilitate drug administration. Animals were subjected to SPS. Agmatine and the involvement of Imidazoline receptors (I_1 and I_2) were assessed for their effect in fear conditioning apparatus. During weeks 1, 2, and 3, in CFR, agmatine (40µg/rat, icv) showed significantly decreased freezing time as compared to other doses of agmatine (10 and 20µg/rat, icv). Imidazoline (I_1 and I_2) receptor agonists Moxonidine (25µg/rat, icv) and 2-BFI, (10µg/rat, icv) respectively, at their sub-effective doses, with a submaximal dose of agmatine (20µg/rat, icv) significantly decreased the altered freezing time during weeks 1, 2 and 3 compared to SPS animals. Moreover, the effective dose of agmatine (40µg/rat, icv) with imidazoline (I_1 and I_2) receptor antagonists Efaroxan (10µg/rat, icv) and Idazoxan (4µg/rat, icv) respectively does not show a significant effect on freezing. Agmatine and its combination with I_1 and I_2 agonists, normalized the altered freezing behavior due to SPS during CFR projecting its strong therapeutic implication for CFR in SPS induced-PTSD.

Keywords: Post-traumatic stress disorder, single prolonged stress, conditioned fear response, agmatine, imidazoline receptor.

PT/ST4/0095

In vitro Comparative Study of Antimicrobial and Insecticidal Activity using Lemongrass Oil

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Abstract: Evaluating the antimicrobial activity and insecticidal activity using lemongrass oil. Invitro method of agar diffusion method was used to evaluate the antimicrobial activity using lemongrass oil. Lemongrass oil was used for determination of antibacterial activity. Prepare various concentrations of lemongrass oil in ethanol in a 10ml volumetric flask. Six agar plates were punched with cork borer and each concentration of lemongrass oil was injected using a micropipette. Different concentrations of lemongrass oil were injected and the agar plates were incubated for 24 hours to check the zone of inhibition. The zone of inhibition was measured using streptococcus aureus. Six trials were carried out to determine the adulticidal properties of lemongrass oil against houseflies. In these trials, cotton balls were soaked in different concentration of lemongrass oil in acetone solution. These cotton balls were placed into a glass jar containing 100 flies and monitored for fly mortality for half an hour. Evaluation of insecticidal activity of lemongrass oil against houseflies. The results of invitro antimicrobial activity using the lemongrass oil were determined against streptococcus aureus, at different concentrations and zone of inhibition was checked. As the concentration of lemongrass oil increases, the zone of inhibition decreases concurrently. And the insecticidal activity and adulticidal activity of lemon grass essential oil against adult fly- fumigation was observed. The result obtained in this study indicates that the lemongrass oil used has better effect against the microbes. Hence it can be concluded that lemongrass oil is more effective against microbes rather than insects.

Keywords: Antimicrobial activity, insecticidal activity, lemongrass oil, Helicoverpa.

PT/ST4/0097

Role of Agmatine in Alcohol Craving and Withdrawal Symptoms in Rats

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Abstract: Alcohol abuse is a significant causative factor of death worldwide. Agmatine is well known for showing the anxiolytic, antidepressant like action by acting through α2–adrenoreceptor, and I1/I2 imidazoline receptors and blocks N-methyl-D-aspartate (NMDA) receptors as well as other ligand-gated ion channels and inhibit nitric oxide synthase (NOS). However, its effects on alcohol cravings and alcohol withdrawal symptoms have not been investigated. In this study, we assessed the possibility of using agmatine for the treatment of these symptoms in a rat model of alcoholism. We induced alcoholism in rats using a free-choice drinking model for 60 days. From day 61, free-choice was continued until day 82 for the craving model, whereas only water was offered in the withdrawal model. Meanwhile, the treated groups for both models received agmatine (20,40 & 80 mg/kg/day) intraperitoneally from day 61 to 82, followed by behavioural, and biochemical assessment. Agmatine treatment caused a significant decrease in alcohol consumption with a positive effect on anxiety-like behaviour in the open field test, memory in the elevated plus maze, and immobility in the forced swim test. Moreover, agmatine inhibits NMDA receptors and modulates oxidative stress levels in the brain. Furthermore, agmatine normalized GABA and glutamate which were disrupted by alcohol consumption. Based on these findings, agmatine reversed alcohol cravings and withdrawal symptoms associated with alcohol dependence by modulating the hyperactivation of NMDA receptors and normalizing the level of oxidative markers and neurotransmitters in the brain.

Keywords: Agmatine, Alcohol craving, Alcohol dependence, Alcohol withdrawal symptoms.

PT/ST4/0098

Alzheimer's Disease, Clinical Trails, Pharmacology, Neurodegernative Disorder, Dementia.

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Abstract:

Alzheimer's disease is one of the most common neurodegenerative diseases and is considered to be the main cause of cognitive impairment in elderly people. The major symptom of Alzheimer's disease is progressive dementia that eventually results in dysfunction of daily life. Alzheimer's disease is a the most common form of dementing illness and the prevalence of Alzheimer's disease increases with each decade of life. At present almost 50 to 60 percent of are affected with Alzheimer's disease. The etiology of this disease is unknown, and currently pharmacotherapy neither cures nor arrest the pathophysiology. Neurotic plaques and neurofibrillary tangles are the pathologic hallmarks of Alzheimer's disease however the definitive cause of this disease is yet to be determined. Alzheimer's disease affects multiple areas of cognition and is character by a gradual onset with a slow, progressive decline. pharmacotherapy for Alzheimer's disease focus on impacting three domines cognition, behavioral and psychiatric symptoms and functional ability. The nondrug therapy and social support for the patient and family are the primary treatment interventions for disease. pharmacotherapy may reduce the total cost of treating this disease by delaying cognitive decline and time to nursing home. Alzheimer's disease is still on clinical trails due this the Alzheimer's disease has no specific treatment, only symptomatic treatment is given.

Keywords : Pharmacotherapy, Alzheimer's disease, cognition, Behavioral.

PT/ST4/0099

Progeria – unstability of the cell

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Abstract: Progeria leads to extreme premature aging and affects many different body systems. The symptoms begin within a year of life with poor growth and weight gain. Due to chromosomal mutation which leads to production of progerin in place of lamin A which leads to unitability of the cell. 1 in 20 million people about 350 – 400 children living with progeria worldwide at any time. Boys and girls are affected equally and not inherited from a parent. Progeria have a characteristics facial appearance with a large head small mouth and and chin narrow nose and large eyes. Other symptoms include baldness loss of fat under the skin and dental and joint abnormalities. Diagnosis is based on the symptoms clinical exam and may be confirmed by the result of genetic testing. There is no specific treatment only symptomatic treatment was provided.

Key words: Progeria; progerin; lamin A; growth defect.

PT/ST4/00100

ZIKA VIRUS

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Abstract: Zika virus is an arthropod borne virus transmitted by Aedes mosquito. It was first identified almost 70 years ago. This infection spread within the Africa and Asia continents. Its transmission to human beings takes place through the Aedes mosquito bite. The symptoms such as low-grade fever with rash is seen. The complications of this virus include congenital microcephaly and Guillain barre syndrome. There is no specific treatment option for Zika virus. Some safely measures and medication for symptom relief. the recent outbreak of Zika virus infection is between the 2015-2016.there is no current outbreaks world-wide. In 2021, only one traveller contracted Zika virus from the U.S territories. There is no vaccine or antiviral therapy available presently for Zika virus.

key words: virus, mosquito, treatment, worldwide.

PT/ST/00102

Combination of Pioglitazone and celecoxib for the treatment of non-small cell lung cancer: A preliminary assessment of anticancer efficacy

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Abstract: Non-small cell lung cancer (NSCLC) is the most prevalent with least chemotherapy-responsive. The current NSCLC chemotherapeutics are linked to a number of dose-limiting side effects, including bone marrow suppression, neurotoxicity, nephrotoxicity, and ototoxicity, etc., which are resulting in patient non-compliance. Many cancers, such as breast, lung, ovary, and others, overexpress PPAR- receptors and COX-2 enzymes, which are essential for tumor development, angiogenesis, and metastasis. Lack of PPAR- activation and excessive prostaglandin synthesis lead to Ras/Raf/Mek activation and, eventually, NF-kB-mediated tumour development. In this study, the combination of COX-2 inhibitor Celecoxib and PPAR-agonist Pioglitazone was examined for its ability to treat NSCLC cancer. Sixty adult male Balb/C mice were separated into three groups: treatments groups along with sham control, and disease control. Mice were administered doses of celecoxib (25 and 50 mg/kg), pioglitazone (10 and 20 mg/kg), and nicotine-derived nitrosamine ketone (NNK) (10 mg/kg). Weekly body weight, food intake, mean survival time, and percentage improved life span were assessed. At the conclusion of the study, histological investigation and tumour weight were conducted. Compared with pioglitazone alone treatment group, the combination of celecoxib and pioglitazone showed significant reduction in the tumour growth, lung tumour weight, increased life expectancy, and longer mean survival time ($p<0.05$). Further, histopathological studies confirmed the reframed the architecture of the lungs in combination treatment group compared to disease control. These preliminary findings suggest that pioglitazone combined with celecoxib may be a potent chemopreventive drug for NNK-induced NSCLC.

Keywords: Non-small cell lung cancer, pioglitazone, PPAR-G, celecoxib, COX-2

PT/ST4/00103

Agmatine Attenuates Dysregulation of Gut Brain Axis in Obsessive Compulsive Disorder in Mice

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Abstract: Obsessive compulsive disorder (OCD) is a psychiatric illness characterized by the presence of intrusive and unwanted repetitive thoughts, impulses, images or urges (obsessions) together with repetitive mental acts or behaviours that an individual feels driven to perform (compulsion), whereas available treatments yield suboptimal therapeutic response to this condition. Agmatine is a novel neurotransmitter abundantly present in brain and gut; it is critically involved in psychiatric illness. Studies have revealed that variations in the composition of the gut microbiota may influence anxiety and mood and vice versa. Keeping the concept of this bidirectional microbiota-gut-brain axis in mind, present study was planned to examine the role of agmatine in gut-brain-axis dysregulation during OCD in mice. Experiment animal were exposed cocktail of antibiotic i.e ampicillin (75 mg/kg, oral) and metronidazole (50 mg/kg, oral) for consecutive 3 days to cause dysbiosis induced OCD like behaviour and it was evaluated by checking alteration of microbiota composition. Dysbiotic animal shows compulsive like behaviour evaluated by marble burying model. Agmatine (20 and 40 mg/kg, oral) and Lactobacillus (1 and 2 ml/kg, oral) single dose administration showed significant inhibition of marble burying behaviour in mice. In combination studies, the marble burying behaviour of agmatine (10 mg/kg, oral) was significantly potentiated by prior administration of Lactobacillus (0.5 ml/kg, oral). The sub-effective dose combination of agmatine and Lactobacillus enhances brain agmatine level significantly. These results clearly indicated the role of agmatine in dysregulation of gut-brain-axis in obsessive compulsive disorder.

Keywords: Gut-Brain-Axis, Agmatine, Probiotics, Obsessive Compulsive Disorder, dysbiosis

PT/ST/00104

Evaluation of Anti parkinson's activity of novel unani formulation Castoreum in chlorpromazine induced experimental animal model

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Abstract: The present study was undertaken to evaluate the Anti-Parkinson's Activity of the Unani crude drug molecule Jund Bedastar (Castoreum) in chlorpromazine induced Parkinson's disease in Wistar albino rats. Castoreum, in Unani literature is used for the treatment of tremors (Ra'asha). The aqueous extract of the drug was used as a test drug in a dose of 200mg/kg body weight and 400mg/kg body weight respectively. Chlorpromazine caused significant increase in the levels of malondialdehyde, while the treatment with Castoreum as oral administration significantly decreased the lipid peroxidation in the diseased animals. Administration of the extract also produced a significant elevation ($p<0.05$) in anti-oxidant enzymes such as superoxide dismutase, catalyses, and reduced glutathione in the diseased animals when compared to the negative control that did not receive any treatment. The results of the behavioural analysis were also significant ($p<0.05$) as documented from the results of block test, pole test and beam traversal task test. The presence of many anti-oxidants in the Castoreum could be the possible reason for its significant neuroprotective activity.

Keywords: Parkinson, Chlorpromazine, Castoreum, Glutathione, neuroprotective

PT/ST4/00105

Drug Addiction and Drug abuse

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Abstract: Addiction is a neuropsychological disorder characterised by a persistent and intense urge to use a drug, despite substantial harm and other negative consequences. Repetitive drugs use often alter brain function in way that perpetuate craving, and weekends self-control. Drug addiction also called substance use disorder, is a disease that affects a person's brain and leads to an inability to control the use of legal or illegal drug or medication. Drug addiction and drug abuse, chronic or habitual use of any chemical substance to alter the states of body or mind for other than medical warranted purpose. Many drug addictions are from prescribed drugs also some of the people are severely addicted for the prescribed drugs which caused by in appropriate consult and awareness about those drugs. Now a days the drug addiction and drug abuse become the common problem. Many prescribed drugs are becoming addictive. The pain medications like oxycodone and morphine, cannabis are most addictive drugs and some other crude drugs like opioids, heroin, caffeine, marijuana (weed) can be more addictive and can kill the person. The side effects of addiction are seizures, stroke, mental confusion , brain damage and also lungs disease. Drug abuse and drug addiction occurs due to misuse of both legal and illegal drugs which have to be control and prevent the abuse

Keywords: illegal, prescribed drugs, addiction , abuse.

PT/ST4/00106

Coronavirus: Evolution and its Implications

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Abstract: The first case of human infection of covid was reported in Wuhan. It was observed that the present coronavirus was highly identical nearly 80 percent to the SARS-CoV, it triggered acute respiratory distress syndrome (ARDS) with remarkable morbidity in 2002-2003. The new virus was christened "Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2, 2019-nCoV). Symptoms include cold, cough, and difficulty in breathing. The virus infection was so severe and affected nearly the whole world manifesting into a pandemic. As the disease progressed and understanding was improved, the virus as is its nature started mutating into new strains increasing its virulence and severity of disease and potential to spread. Characteristics strains like HcoV-229E, HcoV-OC43, SARA-CoV, HcoV-CoV, and SARS-CoV-2 and variants of interest for SARS-CoV-2 like epsilon, zeta, eta, kappa, omicron. lambda, mu, and xe were reported and the process seems never-ending. The present work focuses on the evolution of coronavirus, general lineage, reporting year, cellular receptors, natural host, and respiratory symptoms of various strains and overall treatment and management.

Keywords: Covid, Corona, variants, pandemic, omicron, SARS

PT/ST4/00107

Evaluation of Hepatoprotectant Activity of Ethanolic Extract of leaves of Euphorbia heterophyllia .

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Abstract: Plant extracts rich in antioxidants show immense potential for hepatoprotection as they protect the liver from damage caused by oxidative stress and free radicals. So, the aim of the study was to evaluate the alcoholic extract of leaves of Euphorbia heterophylla for hepatoprotectant Activity as they are known for their antioxidant content. The extract was subjected to preliminary chemical tests to ascertain the presence of all chemical constituents in adequate amounts, followed by biochemical and histopathological studies conducted on Wistar rats using Silymarin as a control. The levels of SGOT, SGPT, ALP, Bilirubin and total protein were estimated along with antioxidant activity by the Lipid Peroxidation Method and Super Scavenging Activity. The data obtained was evaluated for statistical significance applying ANOVA followed by students T -test using Graph Pad Prism Software. The alcoholic extract of Euphorbia heterophylla successfully demonstrated protection from ethanol induced hepatotoxicity in medium doses ($P<0.01$) and high doses ($P<0.001$). Restoration of hepatic cells with minor fatty changes and absence of necrosis after treatment with extract was observed in the histopathological studies indicating satisfactory hepatoprotection. Hence it can be concluded that alcoholic extracts of Euphorbia heterophylla show significant promise of hepatoprotection in the doses used in the present study.

Keywords: Euphorbia heterophylla, Hepatoprotectant, Antioxidant, Superoxide Scavenging, Lipid peroxidation, Liver Enzymes

PT/ST4/00108

Mucormycosis: a grave health challenge in covid pandemic.

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Abstract: Mucormycosis during covid pandemic become a disease of concern due to the increasing number of cases and fatalities. Historically first case was reported in 1855. The current scenario is concerned with the covid-associated mucormycosis which occurs after or during the severe covid infection and treatment and complicates the pateints conditions often resulting in worst scenario. Diabetic and immune-compromised patients are more prone to it . Etiopathogenesis focused on conditions like hypoxia, prolonged hospitalization, diabetic patients, hypertensive patients, and immune-compromised patients suffering from covid. As per the current scenario the combination of drug therapy and in severe cases the surgical procedures are involved. The current work comprehensively reviews types, pathogenesis, hot risk factors, clinical manifestations, mortality rate and the ways of manifestation of Mucormycosis.

Keywords: Mucormycosis, covid, pandemic, immunosuppression, fungal

PT/ST4/00109

Evaluation of Hepatoprotectant Activity of Ethanolic Extract of leaves of Euphorbia heterophyllia .

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Abstract: Plant extracts rich in antioxidants show immense potential for hepatoprotection as they protect the liver from damage caused by oxidative stress and free radicals. So, the aim of the study was to evaluate the alcoholic extract of leaves of Euphorbia heterophylla for hepatoprotectant Activity as they are known for their antioxidant content. The extract was subjected to preliminary chemical tests to ascertain the presence of all chemical constituents in adequate amounts, followed by biochemical and histopathological studies conducted on Wistar rats using Silymarin as a control. The levels of SGOT, SGPT, ALP, Bilirubin and total protein were estimated along with antioxidant activity by the Lipid Peroxidation Method and Super Scavenging Activity. The data obtained was evaluated for statistical significance applying ANOVA followed by students T -test using Graph Pad Prism Software. The alcoholic extract of Euphorbia heterophylla successfully demonstrated protection from ethanol induced hepatotoxicity in medium doses ($P<0.01$) and high doses ($P<0.001$). Restoration of hepatic cells with minor fatty changes and absence of necrosis after treatment with extract was observed in the histopathological studies indicating satisfactory hepatoprotection. Hence it can be concluded that alcoholic extracts of Euphorbia heterophylla show significant promise of hepatoprotection in the doses used in the present study.

Keywords: Euphorbia heterophylla, Hepatoprotectant, Antioxidant, Superoxide Scavenging, Lipid peroxidation, Liver Enzymes

PT/ST4/00110

Acute Agmatine Administration Attenuates Anxiety Mediated Through Gut- Brain-Axis in Rats

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Abstract: Anxiety is an aversive emotional state, in which the feeling of fear is disproportionate to the nature of the threat and it is one of the major neurological complications. Recent studies demonstrated that bacteria, including commensal, probiotic, and pathogenic bacteria, in the GI tract can activate neural pathways and CNS signaling systems which are altered in anxiety. Agmatine is a novel neurotransmitter in the brain and it is dysregulated in anxiety. The present study evaluated the effects of acute administration of agmatine in anxiety caused by antibiotic induced gut-brain-axis dysregulation in rats. Administration of antibiotic ampicillin (500 mg/kg, oral) for 14 days causes dysbiosis induced anxiety. Agmatine (dose dependent) and Lactobacillus clausii (dose dependent) and a combination of sub-effective doses of Agmatine+Lactobacillus clausii was administered orally for consecutive 3 days. Subsequently, animal groups were evaluated for assessment for anxiety using elevated plus maze (EPM). Gut microbiota estimations were done for control and dysbiotic group. Administration of antibiotics causes dysbiosis indicated by decrease in Lactobacillus and increased in E. coli concentration in fecal matter of rats as compare with control. Agmatine (10 and 20 mg/kg, oral), Lactobacilus clausii (0.5 and 1 ml/rat, oral) and sub-effective dose of Agmatine (5mg/kg, oral) + Lactobacillus (0.25 ml/rat, oral) administration for 3 days comparatively improved the time spent in open arm, number of entries in open arm in EPM, also the closed arm entries were unaffected as compare with control . The behavioral assessment in this study strongly recommends that Agmatine may act through gut brain axis to produce its anxiolytic effect and it is one of the important regulators of GBA signaling.

Keywords: Gut-Brain-Axis, Agmatine, Probiotics, Anxiety.

PT/ST4/00111

Evaluation of ethyl acetate fraction of sesbania grandiflora linn. roots for anti- inflammatory and anti-arthritic activity in Rats

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Abstract: The present investigation was designed to evaluate anti arthritic and anti-inflammatory potential of ethyl acetate fraction of Sesbania grandiflora Linn. Roots (EAFSGR). The methodology involved Wistar rats and mice of either sex in this study. Acute oral toxicity studies of (EAFSGR) were performed in mice. Anti-inflammatory activity of EAFSGR was evaluated in experimental models, viz., carrageenan (0.1 ml) induced paw edema model. Further, anti-arthritic activity was evaluated against Complete Freund's adjuvant (CFA) injection (0.1 ml) into the planter region of the right hind paw. Standard diclofenac sodium and EAFSGR treatment was started on the day 14 up to 28 days. Macroscopic, biochemical, oxidative stress and histopathological parameters were assessed. The results found that EAFSGR (100 and 200 mg/kg) exhibited a significant inhibition in paw volume against carrageenan-induced paw edema. EAFSGR showed significant anti arthritic activity against Complete Freund's adjuvant-induced rheumatoid arthritis and thus showed significantly decreased paw volume, joint diameter and arthritic score, In hematology parameters, RBC and Hb counts were significantly increased and WBC counts were decreased. In serum biochemical parameters, showed ALT, AST and ALP level significantly decreased and GSH, CAT levels and decreased levels of LPO. The present study suggests that the ethyl acetate fractions of Sesbania grandiflora Linn. roots. exhibited anti-inflammatory and anti-arthritic activity. The observed effect could be attributed to the presence of vital phytoconstituents like flavonoids, phenolics triterpenoid and betulinic acid.

Keywords: Arthritis, Sesbania grandiflora, diclofenac, Complete Freund's adjuvant, carrageenan.

PT/ST4/00112

A study to evaluate the efficacy of Thanga parpam in a mouse model of Parkinson's disease

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Abstract: Metal based drugs have proven high anti-oxidant potential, particularly gold based nanoparticles like Thanga parpam (TP) have shown potent anti-inflammatory and anti-oxidant potential. Since there is no validated data available for the role of TP in Parkinson's disease (PD), the present study aims to determine the efficacy and neuroprotective effects of TP in rotenone intoxicated mice. Rotenone has been extensively used as a neurotoxin model to induce PD like symptoms in mice. In the current study, evaluated the efficacy of prophylaxis treatment of TP for 5 days and then challenged with rotenone (30mg/kg) for 11days induced neuro toxic effects in mice focusing on neuro behavioural and bio chemical assessments. On day 13 to 16 behavioural assessments like Beam walk (Latency and number of foot slips) and NORT were evaluated. TP treated groups have shown significant improvement in the motor functions as evidenced through latency time and number of foot slips in the beam walk but failed to enhance the exploratory time for novel object indicating that TP at these dose levels failed to elicit behavioural alterations. We also analysed for the levels of corticosterone and Lipid peroxidation (TBARS) levels. Treatment with TP groups has shown reduction in the levels of corticosterone and TBARS levels as compared to positive control indicates role of TP in mitigating the HPA axis imbalance and oxidative stress. Based on these findings we propose that TP as the promising neuroprotective agent and can be of a choice as adjuvant or prophylactic agent in Parkinson disease. Further molecular studies are anticipated to confirm the same.

Keywords: Thanga parpam, Parkinson's disease, Neuroprotection.

PT/ST4/00113

A study to evaluate the role of Ezetimibe on cognition and lipid profile in high fat diet fed sleep restricted mice

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Abstract: Sleep is an important phenomenon which plays a crucial role in metabolic clearance (brain) and consolidation of memory. Sleep deprivation (SD) leads to the oxidative stress, inflammation along with alterations in synaptic plasticity in the brain impairing cognitive ability. SD also leads to over-consumption of high fat /calorie during the day following SD. High fat diet (HFD) are rich in saturated fats leads to obesity and mediated inflammation altering the synaptic plasticity, lipid profile, and proteins triggering neurodegeneration and neuroinflammation. Sleep deprivation (S.D) along with high fat intake leads to increased circulating and neuronal cholesterol levels along with stimulation of pro-inflammatory markers affecting cognition. The status of Ezetimibe in lipid lowering is well evident but with respect to cognition in sleep restricted (SR) status is not well elucidated. Therefore, this study was designed as a drug repurposing study to evaluate the effects of Ezetimibe with respect to SR and HFD status. In the present study, HFD animals gradually gained weight accounting to the hedonic hunger, palatability of the HFD, energy expenditure and composition of the HFD. However, weight loss in SR animals credited to the SR mediated inflammation which delayed the recovery process in mice along with altered inflammatory marker expression in the adipose tissues decreasing the fat mass. Moreover, treatment with Eze has improved the spatial memory in MWM assessment in treated groups by significantly decreasing the escape latency, increasing the time spent and the distance travelled in target quadrant owing to the anti-inflammatory, anti-oxidant and cholesterol lowering effects of ezetimibe in the brain which improves short term and long-term neurological activity.

Keywords: Sleep deprivation(SD), high fat diet (HFD), sleep restricted(SR)

PT/ST4/00114

Protective Effects of Helicteres isora L. Fruit Extract on Phenylhydrazine-induced Hemolytic Anemia in Rats

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Abstract: Phenylhydrazine is a chemical intermediate commonly used in the pharmaceutical, agrochemical and chemical industries. It causes hemolytic anemia by causing free radical-induced oxidative stress on the red blood cell membrane. Helicteres isora L. (family: Malvaceae), an Indian medicinal plant, has significant antioxidant properties that are responsible for its medicinal properties. The present study was conducted to investigate the protective effects of aqueous fruit extract of Helicteres isora L. (AFHI) on phenylhydrazine-induced hemolytic anemia in rats. Male Wistar rats were administered with phenylhydrazine (40 mg/kg, i.p.) for two consecutive days to induce anemia. The effect of AFHI was investigated at three oral doses viz. 250, 500 and 750 mg/kg once daily for 13 days by estimating blood parameters and pathological changes in the liver, heart, spleen, kidney, lungs and bone marrow. Phenylhydrazine administration caused a significant decrease in red blood cells, hemoglobin, and hematocrit levels. These decreased levels were significantly improved by AFHI in a dose-dependent manner. Pathological changes in the liver, heart, spleen, kidney, lungs and bone marrow were prevented by AFHI treatment. It is concluded that the aqueous fruit extract of Helicteres isora L. provides significant protection against phenylhydrazine-induced hemolytic anemia.

Keywords: Helicteres isora L., Hemolytic anemia, Phenylhydrazine

PT/ST4/00115

Protective effect of phaseolus vulgaris linn seeds extracts on experimental models of inflammatory bowel disease in rats

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Abstract: The present study was designed to evaluate, ethanolic extract (PVEE) and aqueous extracts (PVAE) of Phaseolus vulgaris Linn against experimental induced IBD. Two different models namely indomethacin-induced enterocolitis and acetic acid induced ulcerative colitis in rats. Sulfasalazine was used as the standard drug for comparison. Male wistar rats were pretreated with ethanolic extract and aqueous extracts of Phaseolus vulgaris Linn in the dose of 10 and 25 mg/kg p.o. daily for a period of 7 days. On 8th and 9th day indomethacin was administered (7.5 mg/kg, s.c.) to induce enterocolitis. Whereas for acetic acid induced ulcerative colitis model, two ml (3%, v/v) acetic acid in saline was instilled into the rectum of a rat. However, treatment with extract and standard drugs was continued till 11th day and at the end animals were sacrificed by cervical dislocation and dissected open to remove ileum and colon. Colon and ileum was flushed gently with saline, cut open and scored for inflammation based on the macroscopic features. Tissues were fixed in 10% formalin saline and examined histopathologically. Quantification of inflammation was done using Myeloperoxidase assay(MPO), Lactate Dehydrogenase (LDH), Lipid Peroxidase (LPO). All parameters were altered in ulcerated rats, and improved in animals receiving ethanolic extract and aqueous extracts of Phaseolus vulgaris Linn. This activity was comparable to that of the standard sulfasalazine. Evaluation based on macroscopic features showed significantly lower score values for drug treated and standard drug treated groups compared to the disease control groups. Histological examination of disease control group showed massive necrosis of the mucosa and XVI submucosa. Drug treated group showed mild lesions, regeneration and inflammatory reaction. The sulfasalazine treated group showed suppressed inflammatory reaction. The results observed from MPO, LDH and LPO assays showed significant improvement of disease with extract treated groups compared to disease control group. Results showed significant inhibitory activity against inflammatory bowel disease induced in these experimental animal models. The results obtained established the efficacy of the Ethanolic extract and aqueous extracts of Phaseolus vulgaris Linn. against inflammatory bowel diseases possibly by its anti-inflammatory properties.

Keywords: IBD, Indomethacin, Acetic acid, Phaseolus vulgaris Linn.. Ulcerative colitis, Cronh's disease.

PT/ST4/00116

A study on the safety and neuroprotective profile of Sesame lignans in sleep restricted mice

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Abstract: Sleep is an essential component of healthy lifestyle. Good sleep is necessary to feel rejuvenated, to maintain a healthy balance in the body, and to ensure that the body system functions properly. Sleep deprivation has become prevalent as a result of lifestyle changes and globalization, with neurochemical alterations and neuronal cell death as distinctive symptoms leading to memory impairment. To treat sleep related disorders synthetic medications, which are habit-forming and have negative effects, are being used. Traditional and herbal remedies must be investigated in order to counteract the harmful effects of synthetic medications. The present study was designed to investigate the protective effect of sesame lignans on sleep deprivation induced cognitive impairment and oxidative stress. Black sesame seeds are also used as a supplement for a safe potential treatment to improve sleep quality and for those who have sleep problems. Researchers have reported that sesame lignans possess multiple physiological functions, such as antioxidant property, protective effects against hormone-related diseases and anti-inflammatory properties. There is a lack of evidence to prove their efficacy in sleep related disorders. Furthermore, to confirm its therapeutic potential, substantial preclinical data is necessary. Sesame lignans have demonstrated to have better anti-inflammatory properties as a food supplements, however scientific data on this subject is limited. In this study acute oral toxicity testing was performed to determine the safety of sesame lignans, and the results showed no toxicity signs at a dose of 2000mg/kg classifying it as group 5 or unclassified status according to the GSH Classification System. Sleep deprivation was induced by using modified multiple platform method. Results showed that following sleep restriction there is an impaired cognitive function and elevated oxidative stress. In the present study treatment with sesame lignans has shown to reduce the sleep deprivation induced cognitive impairment and oxidative stress. Furthermore, studies at molecular level are required to reconfirm the therapeutic potential of sesame lignans on sleep related disorders.

Keywords: Sleep deprivation, Sesame lignans, oxidative stress, cognitive decline, memory impairment.

PT/ST4/00118

Evaluation of neuroprotective effect of Withanolide-A standard extract in gonadectomized sleep restricted male rats

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Abstract: Decreased testosterone level is linked to sleep disorders in aged populations. Testosterone replacement is shown to improve sleep quality and duration in experimental models of sleep. While long term administration of testosterone reported to impart deleterious effects in metabolism, specifically on kynurenic acid pathway leading to neurodegeneration Alternative therapy with natural/herbal moiety is the current research focus for life style diseases. Reports have shown the androgenic effects of Withanolide-A (Wit-A). Present study aims to determine the neuroprotective effects of Wit-A standard extract of Withania somnifera in gonadectomized - sleep deprived male rats. The rats were gonadectomized and sleep deprived using modified multiple platform method for a period of 21 days. Animals were treated with Wit-A of 100 and 300 mg/kg for 21 days. At the end of 21 days, behavioral parameter was assessed using Morris water maze (MWM). The results of MWM show decreased latency time in the Wit-A treated groups compared to gonadectomized, sleep restricted controls, indicating the increase in the spatial learning capacity. The animals were euthanized, collected serum was analyzed for the levels of glucose, testosterone, and corticosterone. Wit-A restored testosterone, glucose levels and decreased corticosterone level in treated groups. The present study revealed the beneficial role of Wit-A in gonadectomized sleep deprived animals. Wit-A reversed CSD induced alterations in sleep deprived animals.

Keywords: Sleep deprivation, Gonadectomy, Withanolide-A, Spatial learning.

PT/ST4/00120

Study On Synergistic Anthelmintic Activity Of Amla And Feroniae Lephantum Correa Leaves Juice Extract in combination

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Abstract: Around 1.5 billion individuals suffer from helminthiasis, a parasitic helminth infection caused by several types of parasitic helminths (worms). Many natural herbs have antihelmenthic effects and can be explored for the same. Feroniae Lephantum Correa and Amla are reported to have mild activity. The present study was planned to evaluate synergetic anthelmintic activity of fresh juice of both plants using earthworm as a standard worm species. Time to pyralise and death were noted to evaluate effectiveness. The results indicate that combination of fresh juice of Citrus Limon and Feroniae Lephantum Correa have synergistic anthelmintic activity.

Keywords: Helminthiasis, Anthelmentics, Citrus Limon, Feroniae Lephantum Correa, synergism

PT/ST4/00122

In vivo Assessment of Anthelmintic potential Of Citros Limon And Indian bael fruit Juice Extract

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Abstract: The aim of the present study was to evaluate the anthelmintic activity of citrous lemon and Indian bael leave juice extract. The study was planned to evaluate synergetic anthelmintic activity of fresh juice of both plants using earthworm as a standard worm species. Various concentration (20%, 50%, 100% ml) of plant extract was tested in the bioassay.The extract of leaves is tested on warm the time of paralysis and time of death were studied and the activity was comapared with citrus lemon as reference standard. The extract of Indian bael leave juice exhibited significant anthelmintic activity as evidence by decrease paralysing time and death time.

Keywords: anthelmintic, albendazole, earthworm, citrus lemon and Indian bel leaves

PT/ST4/00123

A review on scorpion venom: an unrevealed medicine for human ailments: Great scope for pharmaceutical research

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Abstract: The Scorpion's venom is poisonous and contains group of nucleotides, enzymes, mucoproteins, biogenic amines, salts, as well as peptides and proteins, which have been used in traditional medicine for thousands of years mainly in Asia and Africa. An endemic species from Cuba, "Rhopalurus junceus", venom of this blue scorpion has been widely studied for its anti-inflammatory and analgesic activities. But this natural product also exhibits potential activity in the treatment of some types of cancer, because of the certanity that the venom components which are reason for the cytotoxicity observed in human envenomation, have been studied recently the active components with anticancer effects. The ion channel (K^+, Na^+, Cl^-, Ca^{2+}) modulating capacity of Scorpion venom and this concept has been hypothesized in formulating pharmaceuticals. The achievement of these venom components as formulated anticancer agent in Phase I and Phase II clinical trials allure researchers to excavate beneficial venom components prohibiting DNA replication in malignant tumor cells. This review brings forth the achievements of Science and Technology in classifying the venom components as therapeutics and further application in drug product development. **Chlorotoxin** is the active constituent present in the scorpion venom. This review is based on the various medicaments in the scorpion venom.

Keywords: Scorpion venom, Rhopalurus junceus, cytotoxicity, envenomation, Chlorotoxin.

PT/ST4/00124

Assessment of pharmacovigilance-an unnoticed and unrecognized department in pharmacy field in India

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Abstract: The objective was to assess the knowledge about pharmacovigilance among the pharmacy students of several colleges in Tamil Nadu. Pharmacovigilance is defined as the science and activities relating to the detection, assessment, and prevention of adverse effects or any other possible drug related problems. It plays an important role in improving the clinical outcomes and also decreasing mortality and morbidity rate .A study from South India revealed that 0.7% of hospital admissions were due to ADRs and a total of 3.7% hospitalized patients experienced ADRs of which death accounts for 1.3%.A cross-sectional study was carried out among 200 students in various districts between April-May 2022 by using Google form containing MCQ type questionnaire. The students score was categorized as good and poor. The descriptive statistics were calculated using Microsoft excel 2018 and their knowledge was assessed. Despite of relatively better attitude towards pharmacovigilance and ADR reporting they had a limited knowledge regarding pharmacovigilance and ADR reporting. The study findings highlights the need to strengthen the community pharmacovigilance programme for safer medication use at the community level.

Keywords: Pharmacovigilance, knowledge assessment, pharmacy students, cross sectional study.

PT/ST4/00125

Cholinesterase inhibitory activity of musa paradisiaca flowers for the management of alzheimer's disease – an in vitro study

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Abstract: Neurodegeneration is caused by the progressive degeneration of the central nervous system. Various natural plants were being therapeutically used as brain tonic which helps to restore debilitated conditions. Acetylcholinesterase (AChE) is the key enzyme which regulates acetylcholine level. This enzyme breaks the acetylcholine into choline and acetic acid. Therefore, look for phytoconstituents to treat neurodegenerative diseases with lesser side effects continues in the current scenario. The current study was focus to evaluate the AChE inhibitory activity of the crude extract of Musa paradisiacal flowers. The dried flowers of Musa paradisiacal were used to be extracted with purified water. The aqueous extract of Musa paradisiacal (AEMP)was look for its AChE inhibitory activity using Ellman's method. The percentage inhibition of AChE in the AEMP was compared with the standard Rivastigmine. AEMP showed significant inhibition constant (IC_{50}) values of 14.133 ± 0.24 µg/ml in a dose dependent manner. The standard showed the IC_{50} value of 29.212± 0.48 µg/ml. Based on the in vitro results, the AEMP produced notable AChE inhibition constant than the standard. This in vitro study will be helpful for the identification of potent AChE inhibitor from the AEMP flowers for the management of Alzheimer's disease.

Keywords: Acetylcholinesterase, Inhibition constant, Musa paradisiaca, Alzheimer's disease

PT/ST4/00126

Evaluation of spike glycoprotein of sars-cov-2 inhibitory affinity of certain commercially available terpenoids – an in silico study

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Abstract: Coronavirus, a tremendously contagious infectious disease had a harmful effect on the world's population. It is a family of single-stranded, enveloped, positive-strand RNA viruses of Nidovirales order comes under coroviridae family. Presently in worldwide several lakhs of deaths and infections of several billions people have been reported. Hence, the aim of the current study was to evaluate the SARS-CoV-2 enzyme inhibitory potential of some commercially available terpenoids using Lamarckian genetic algorithm as a working principle. Computational docking calculations of terpenoids against SARS-CoV-2 enzyme were performed using AutoDock 4.2. Based on the drug likeness properties of the terpenoids, Andrographolide, Betulonic acid, Erythrodiol, Friedelin, Mimuscopic acid, Moronic acid, and Retinol were selected for the in silico study. A well-known anti-viral drug Remdesivir was selected as the standard drug. In the present study we found that, Friedelin was showed excellent SARS-CoV-2 enzyme inhibitory potential than the Remdesivir and other selected terpenoids. Based on the in silico computational studies, it can be concluded that Friedelin could be worthwhile against SARS-CoV-2 spyke protein. A further study on Friedelin is required to prove its potential inhibitory property against the coronavirus.

Keywords: Corona virus, Binding Energy, Terpenoids, Intermolecular Energy

PT/ST4/00127

Evaluation of in vitro antidiabetic Polyherbal tablet formulations from traditional Herbs

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Abstract: The main objective of the project is to formulate and evaluate poly herbal anti diabetic tablet. Polyherbal antidiabetic formulation consists of three herbs viz., Nigella sativa (seed), Moringa oleifera (seed), Cinnamum zeylanicum (bark). Nine preliminary clumps of tablets were defined by fluctuating the organization off the excipient's extents for exceptional stream property. The mixed powder of each of the nine preliminary groups were investigated for its stream attributes like mass thickness, tapped thickness, compressibility file, Hausner's proportion and Angle of rest. Absolutely nine preliminaries of plan were completed utilizing various decisions of excipients reasoning about different realities of assembling issues just as quality deformities as a top priority. Every one of the resultant plans were assessed for their stream property, consistency of filling, consistency of weight, dampness substance and breaking down time. The dried polyherbal remove was streamlined for its quality measures and its cluster consistency by making nine diverse preliminary clumps (Trial 1,2,3,4,5,6,7,8,9).The preliminaries were exposed to preformulation boundaries to assert the consistency and quality. The outcome expect that the preliminary 9 was amazing in all boundaries and the qualities were found inside as far as possible and it was utilized for detail Polyherbal Tablet. The developed polyherbal Phytochemical study exhibit the presence of flavonoids in this formulation flavonoids, tannins phenolic compounds are by using qualitative phytochemicals anaylsis. This may be accountable for the potent anti-diabetic activity. The in vitro antidiabetic activity of tablets was evaluated by glucose uptake assay by using 3T3 Cell line.Further investigations are suggested for solidness concentrates in the detailed polyherbal tablet and furthermore clinical preliminaries need to act in future in Human Volunteers.

Keywords: Glucose uptake assay, 3T3 L1 Cell line, Anti Diabetic Tablet, Polyherbal Tablet.

PT/ST4/00128

Tomato mosaic virus

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Abstract: Tomato mosaic virus (TOMV) is a plant pathogenic virus. The tomato potyviruses are transmitted plant to plant by many species of aphids. The foliage of affected tomato plants shows mottling with alternating yellowish and darker green areas. The leaves tend to be fern-like in appearance with pointed tips and younger leaves may be twisted. Fruit may be distorted. India recorded over 100 tomato flu cases in four different states – Haryana , Odisha, Kerala and Tamil nadu. Tomato flu is trending in india as around 82 cases of tomato flu or tomato fever have been reported in india since may 2022 reveals a lancet study. Kerala reported the first case of tomato virus on 6 may 2022. Tomato flu is primarily targeting younger children between 1 to 10 years of age and adults with week immunity. Disease may be effected of chikungunya or dengue fever or a new variant of the viral hand ,foot and mouth disease(HFMD) flu. The treatment for tomato flu seems similar to the treatment of chikunguya and dengue. Patients are advised to isolate rest, stay hydrated and drink plenty of fluids. Symptoms including fatigue and fever nausea, vomiting , diarrhea ,fever, dehydration, swelling of joints, body aches, skin irritation and decolouration. There is no specific medication for treating the disease and it may run its course with time.

Keywords: (OMV) Tomato mosaic virus, (HFMD) viral hand ,foot and mouth disease.

PT/ST4/00129

Evaluation of synergistic anthelmintic activity of citrus limon and feroniae lephantum correa leaves juice extract using pheretima posthuma model

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Abstract: The high cost of existing anthelmintic drugs and development of resistance to helminths hence increasing demand for traditional cost-effective medicine as vermifuge therapy. In the present study, in-vitro experiments were conducted to determine promising anthelmintic effects juice of Citrus limon and Feroniae Lephantum Correaea leaves juice and the combination of leaves juice on Pheretima Posthuma. Method different concentrations (20% 50%, 100%) of juice of C. Limon and F. Lephantum Correa and combination of juice of both leaves were tested and results were articulated in terms of time (min) of paralysis and death of worms. The activities are well compared with the standard drug Albendazole as positive control and saline water as a negative control. Results of Anthelmintic activity were observed dose-dependent manner. It was found that the combination of F. Lephantu Correaea and C. Limon leaves juice at 100% concentrate exhibited significant ($p< 0.001$) anthelmintic activity compared to the standard drug. Albendazole (10mg/ml) while individual juice at 100%, 50%, and 20% concentrate showed less significant activity against worm Pheretima Posthuma. The present study proves the potential of the combination of C. Limon and F.lephantum Correa leaves juice as an anthelmintic drug.

Keywords: Helminthiasis, Anthelmintics, Citrus Limon, Feroniae Lephantum Correa, synergism, Pheretima Posthuma.

PT/ST4/00130

Evaluation of Link Between Self-Ethanol Administration and Gut-Brain-Axis Dysregulation in Rat

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Abstract

Chronic ethanol consumption significantly increases the risk of dying, becoming disabled, and experiencing health issues. It can also interfere with one's ability to work and cause one to become distant from their family. Alcohol consumption severely affect the structure and functionality of the gastrointestinal tract. Agmatine is a novel neurotransmitter critically involved in complications of alcoholism and abundantly present in gut mainly secreted by microbes. Aim of the study to evaluate the relationship between self-ethanol administration and gut-brain-axis dysregulation in rat in two bottle choice paradigm and the role of agmatine and probiotics in ethanol-induced dysbiosis. We administered alcohol for consecutive 7 days and observed the different parameters of anxiety in elevated plus maze, along with ethanol intake, food intake, body weight, locomotor behaviors, etc. during alcohol withdrawal on next day. Also, we estimate the fecal microbial level before and after treatment of agmatine and probiotics. Agmatine (20–40 mg/kg, i.p.) and probiotics (1.0-2.0 ml/rat, oral) treatment significantly decreased ethanol intake in the current study's two-bottle choice paradigm and restored the normal gut microbial flora. Agmatine and probiotics at these doses attenuated all the changes including food intake, body weight loss, etc. Similar results were found in administration of sub-effective combination of agmatine and probiotics. Result of the present study reveals that self-ethanol administration disrupts the gut-brain-axis and agmatine and probiotics are potential therapeutic targets that could revert ethanol-induced dysbiosis.

Keywords: Alcoholism, gut-brain-axis, agmatine, probiotics, Lactobacillus.

PT/ST4/00131

Pharmacological Evaluation of Ethanolic Extract of Rhizomes of "Curcuma Aurantiaca"

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Abstract

Diabetes mellitus is one of the major health problems in the world,the incidence and associated mortality are increasing.Inadequate regulation of the blood sugar imposes serious consequences for health.Conventional antidiabetic drugs are effective,however also with unavoidable side effects.The pharmacognostic study on curcuma aurantiaca powder Fixedoil, Carbohydrate, Phytosteroide, Flavonids, Phenolic chemical and Tannins were found in preliminary phytochemical analysis. Extract of ethanol curcuma aurantiaca therapeutic doses of 200 mg/kg and 400 mg/kg were found to have considerable anti-diadetic action.In summary, curcuma aurantiaca rhizomes have greater anti-diabetic action than Glibenclamide. The presence of flavanoids in this extract may be responsible for its anti-diabetic properties, according to this research.

Keywords : Diabetes Mellitus, Curcumin aurantiaca, Flavanoids, Glibenclamide, Steptozotocin

PT/ST4/00132

Neuroprotective activity of ethanolic extract of Alpinia Calcarata Roscoe rhizome in Chemotherapy-induced peripheral neuropathy in rats

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Abstract

Cisplatin or cis-diamminedichloroplatinum (CDDP) is a platinum-based anticancer drug, a cytotoxic chemotherapeutic agent. Widely used drug for treating various cancers and solid tumors, however, its usage has been heavily restricted due to its deleterious side effects including peripheral neuropathy. Cumulative drug therapy of CDDP is known to produce severe oxidative damage. It mainly accumulates and targets in dorsal root ganglia that in turn causes damage resulting in secondary nerve fiber axonopathy. In the present study, we investigated the neuroprotective effect of Alpinia calcarata, in cisplatin (2 mg/kg i.p. once weekly for five weeks) induced peripheral neuropathy in rats. After 5 weeks of treatment, the degree of neuroprotection was determined by measuring behavioural properties. Nerve conduction velocity (NCV) and Sciatic nerve TNF-α and IL6 levels. Alpinia calcarata significantly restored behavioral properties induced by Cisplatin and Alpinia calcarata treated rats showed marked improvement in NCV. Additionally, treatment with Alpinia calcarata decreases sciatic nerve TNF-α and IL6 levels compared to the Cisplatin treated group. These findings demonstrated that Alpinia calcarata effectively ameliorated Cisplatin-induced peripheral neuropathic pain.

Keywords: Cisplatin, Neuropathy, Hyperalgesia, Alpinia calcarata

PT/ST4/00133

Evaluation of antidiabetic activity of flower bud of Cassia auriculata L. with reference to streptozotocin induced diabetic rats

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Diabetes mellitus is a chronic metabolic disease which may be suspected or recognized clinically by the onset of one or more of the characteristic symptoms such as polyuria, polydipsia, polyphagia and unsolved weight loss. Currently, there is a need for safe, effective, and less costly antidiabetic medications, and investigating medicinal plants for new antidiabetic medication is an interesting research area. This study aims to explore the antidiabetic efficiency of bud to identify the differential composition of phycompounds present in bud and flower parts of C. auriculata L. The different parts of medicinal plants vary in their composition of bioactive compounds. There are reports on antidiabetic activity of C. auriculata L. flower and leaves. Traditionally bud of C. auriculata L. is used to treat diabetes rather than flower. Antidiabetic activity of C. auriculata L. bud and flower parts was studied in high fat diet (HFD) and streptozotocin (STZ) induced diabetic rats. During which parameters such as feed intake, water intake, and body weight were monitored. The effective antihyperglycemic extracts were tested for their hypoglycemic activity at two dose levels, 200 and 400 mg/kg, respectively. Antidiabetic activity of C. auriculata L. bud parts was studied in high fat diet (HFD) and streptozotocin (STZ) induced diabetic rats. During which parameters such as feed intake, water intake, and body weight were monitored. After 21 days of the study, blood parameters like insulin, glucose, lipid profile, hepatic function test, renal function test and oxidative stress markers were analysed .The antidiabetic activity results showed that the animal treated with C. auriculata L. bud ethanol extract (EECA500 mg/kg) could better reverse and control the progression of the disease compared to the flower ethanol extract in all the experimental groups. C. auriculata L. bud extract can potentially better control the diabetes compared to that of the standard drug glibenclamide.

Keywords: Antioxidants; Diabetes mellitus; Streptozotocin;

PT/ST4/00134

Investigation of The Anti-Inflammatory Effects and Phytochemical Profiling of Onion (Allium Cepa L.) Peel Extract in standard animal models

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Onion (Allium cepa) is the most routinely used ingredient in Indian cooking and is also one of the commonly cultivated and consumed vegetables globally. When compared to edible onion bulb/flesh, the highest concentrations of phenolics and flavonoids were observed in onion peel/skin. The anti-inflammatory effect of onion (Allium cepa L.) peel extract was evaluated using carrageenan induced rat paw oedema and cotton pellet induced granuloma (chronic) models in rats. The extract of onion (Allium cepa L.) peel extract exhibited significant anti-inflammatory effect at the dose 100, 200, 400 mg/kg. Maximum inhibition (52.4%) was noted at the dose of 400 mg/kg after 3 h of drug treatment in carrageenan induced paw oedema, whereas the indomethacin (standard drug) produced 62.1% of inhibition. In the chronic model (cotton pellet induced granuloma) the extract (400 mg/kg) and standard drug showed decreased formation of granuloma tissue by 50.1 and 57.3% ($p<0.001$) respectively. Thus, the present study revealed that the ethanol extract of extract of onion (Allium cepa L.) peel exhibited significant anti-inflammatory activity in the tested models. The phenolic derivatives compounds were the main antioxidant components and their total contents were directly proportional to their activity. The biochemical compounds, especially phytochemicals viz. total flavonoids, total polyphenols, quercetin and its derivatives present in onion peel make its application feasible in the biomedical and pharmaceutical fields. Substantial research has validated that onion peel are concentrated source of bio actives and thus confer many therapeutic benefits. It may be concluded that is the most efficient method among those investigated in this work for the extraction of phenolic compounds and flavonoids from onion peel extract for the anti-inflammatory activity.

Keywords: Allium cepa L peel, anti-inflammatory activities,

PT/ST4/00135

Protective effect of piperic acid in transgenic Dorsophila model of Parkinson's disease

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Abstract

Parkinson's disease (PD) is a progressive neurodegenerative disorder imposing a severe health and socioeconomic burden worldwide. Existing pharmacological approaches for developing PD are poorly developed and do not represent all the characteristics of disease pathology. Developing cost-effective, reliable Drosophila melanogaster (DM) model will meet this gap. The present study was conceived to study the effect of piperic acid (PA) on the symptoms of PD exhibited by the PD model transgenic DM flies. The effect of PA was studied on the activity pattern, climbing ability, dopamine content and oxidative stress markers (lipid peroxidation, reduced glutathione and catalase). The study showed that the exposure of PD flies to different doses of PA showed a marked delay in the loss of climbing ability and increase in the dopamine content. PA also showed a reduction in various oxidative stress markers. Furthermore, increased dopamine levels were observed upon PA treatment in transgenic DA flies. Hence it is concluded that PA showed a marked reduction in the PD symptoms and thus could be of great importance for further research in treating PD. Transgenic DM flies will be a cost-effective PD model in drug discovery process. Moreover, this model could be potentially utilized to investigate the molecular pathways underlying the multifaceted pathophysiology which leads to PD using relatively inexpensive species.

Key Words: Drosophila melanogaster, Transgenic, Parkinson's disease, Dopamine.

PT/ST5/001

USE OF SIMILARITY INDEX AS A NOVEL APPROACH TO RE-CATEGORIZE LACTATION RISKS TO FACILITATE DECISION MAKING ON DRUG USE IN LACTATING WOMEN

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Abstract: Different drug information resources categorize lactation risks in different ways. This difference poses challenges for prescribers to make the right decision on drug use in lactating women. Therefore, we assessed the consistency of information on drug use in lactation in six drug information resources and developed a list of drugs that are falling in the same lactation risk category based on the similarity index. The recommendations for use of fifty drugs during lactation in six drug information resources namely; Medscape.com, Medsafe.govt.nz, Brigg's Drugs in Pregnancy and Lactation; A Reference Guide to Fetal and Neonatal Risk, 12th edition (DPL), LactMed, UpToDate®, and Portable Emergency Physician Information Database (PEPID©) was collected and documented. Based on the information provided in the drug information resources, the drugs were categorized as either reassuring, cautionary, suggesting avoidance, inconclusive, or no specific recommendation for use in lactating women. Further, the similarity index was also assigned based on the number of times a similar lactation risk category for each drug is repeated. Drugs with a similarity index of four and above were categorized into the most frequent category. The overall Fleiss kappa score was 0.109 [CI: 0.067 to 0.151], indicating a poor consistency among the six drug information resources with regard to recommendations on the use of drugs during lactation. Further, out of fifty, we identified twenty-three drugs having a similarity index of four and above. There were sixteen drugs having a similarity index of more than four in cautionary, five in suggesting avoidance, and two in inconclusive categories. A consolidated list of drugs with their respective lactation risk categories was developed that reasonably guides and eases the prescribers' decision on its use in lactating women.

Keywords: *Lactation risk categories, Similarity index, Drug information resources, Consistency, Drug use in lactation.*

PT/ST5/002

RE-CATEGORIZATION OF PREGNANCY RISKS EMPLOYING SIMILARITY INDEX; A NOVEL APPROACH FOR DECISION MAKING ON DRUG USE IN PREGNANCY

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Abstract: There are various information resources that provide information on drug use in pregnancy. However, different resources categorize the pregnancy risks differently, which often poses challenges to the prescribers on drug use in this special population. Therefore, we aimed to assess the consistency of information on drug use in pregnancy among six drug information resources and develop a consolidated list of drugs that are falling in the same pregnancy risk category based on the similarity index. The recommendations for use of fifty drugs in pregnancy as provided in six drug information resources namely; Medscape.com, Medsafe.govt.nz, Brigg's Drugs in Pregnancy and Lactation; A Reference Guide to Fetal and Neonatal Risk, 12th edition (DPL), United Kingdom's Teratology Information Service at uktis.org (UKTIS), UpToDate®, and Portable Emergency Physician Information Database (PEPID©) was collected and documented. Based on the information provided in the drug information resources, the drugs were assigned with pregnancy risk categories as either reassuring, cautionary, suggesting avoidance, inconclusive, contradicting, or no specific recommendation. A similarity index was also assigned based on the number of times a similar pregnancy risk category for each drug is repeated. Drugs with a similarity index of four and above were categorized into the most frequent category. The overall Fleiss kappa score was 0.074 [CI: 0.039 to 0.108], indicating a poor consistency among the six drug information resources with regard to recommendations on the use of drugs in pregnancy. Further, out of fifty, we identified fifteen drugs having a similarity index of four and above. There were ten drugs having a similarity index of more than four in cautionary, three in reassuring, and one each in suggesting avoidance and inconclusive categories. A consolidated list of drugs with their respective pregnancy categories was developed that reasonably guides and eases the prescribers' decision on its use in pregnant women.

Keywords: *Pregnancy risk categories, Similarity index, Drug information resources, Consistency, Drug use in pregnancy*

PT/ST5/003

A PROSPECTIVE OBSERVATIONAL STUDY TO EVALUATE THE PREVALENCE OF ADVERSE DRUG REACTIONS (ADRS) AND ITS IMPACT ON QUALITY OF LIFE IN PSYCHIATRIC PATIENTS AT A TERTIARY CARE TEACHING HOSPITAL

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Abstract: In recent times, emphasis on pharmacovigilance is elevated due to increased cases of adverse drug reactions coming into notice. Psychotropic medications that are the mainstay of treating psychiatric patients are linked to various adverse drug reactions. The given study lays accentuation on determining the pattern of ADRs due antipsychotics and antidepressants. In this study, we aim to determine the incidence of ADRs and their effect on the QoL of the patients after the ADR(s). A prospective observational study of a total of 300 subjects receiving APs and/or Ads. They were screened for possible ADRs. Possible risk factors for the development of ADRs were also assessed. The difference in the pattern of ADRs in patients prescribed with ADs and/or APs was observed. The causality and severity assessment of the observed ADRs was done by WHO-UMC scale, Naranjo's algorithm, and Hartwig-Siegel scale respectively. Lastly, the impact of ADRs on the QoL of the patients receiving APs and/or ADs was evaluated. The prevalence of ADRs in patients receiving APs and/or ADs is 24.33%. Olanzapine is the most commonly prescribed AP while Sertraline is the most commonly prescribed AD. Olanzapine and Sertraline are responsible for the highest number of ADRs as an AP and AD respectively. Females are found to be at higher risk for developing ADRs. Multiple comorbidities and polypharmacy are also considered to be possible risk factors. The average number of APs and/or antidepressants per prescription is 1.94 drugs. APs are found to be responsible for a higher number of ADRs. The maximum number of ADRs fall into the possible criteria of causality assessment by the WHO-UMC scale and Naranjo's algorithm. All the observed ADRs fall into the mild and moderate category of severity by the Hartwig-Seigel scale. The ADRs have a significant impact on the physical health and psychological domain of QoL Assessment. The need for pharmacovigilance is highlighted by the results obtained in this study. Intense monitoring and increased awareness can help improve the rate of ADR(s) occurrence in patients receiving psychotropic medications. As a result, the impact of ADRs on the QoL of the patients can also be reduced.

Keywords: *Psychotropic drugs, Psychiatry, Adverse Drug Reaction, Quality of Life, Pharmacovigilance*

PT/ST5/004

INTERVENTIONS OF CLINICAL PHARMACIST TO IMPROVE SAFETY IN PATIENTS SUFFERING WITH NEUROLOGICAL DISORDER

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Abstract: Interventions of Clinical Pharmacist to Improve Safety in Patients Suffering with Neurological Disorders: A Prospective Observational Study Clinical pharmacy services aim at improving the health care system by diminishing the prescription errors, rationalizing the treatment and reducing the cost of treatment. The primary objectives of the studies were to detect the drug related problems, to observe patient's progress to drug therapy and to assess the effectiveness of pharmacist participation in improving patient care. In this study 197 mediation errors were identified from 152 cases of patients suffering from neurological disorders. Most common medication error was drug interactions (53%) followed by insufficient lab data (13%), untreated indication (10%). A total number of 51 pharmacist interventions were recommended to the physician, out of which 59% of interventions were accepted. Clinical pharmacist's interventions assisted in early detection of drug related problems and prevention of consequent patient harm. We concluded that if a pharmacist and a physician work in collaboration, it can improve the patient's therapeutic outcome.

Keywords: *Drug related problems, Pharmacist interventions, Neurological Disorders, Drug Interactions*

PT/ST5/006

A CASE REPORT ON PULMONARY NOCARDIOSIS IN AN HIV-INFECTED PATIENT - NEED FOR EARLY DIAGNOSIS

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Abstract: The species Nocardia is majorly found in soil, invades primarily through respiratory route and establishes the infection in the persons with immunocompromised status. A long-term immunosuppressive therapy, HIV and carcinomas are the most common reasons for a person to become immunocompromised. There is often a persisting confusion in the confirmatory diagnosis of pulmonary nocardiosis as the clinical manifestations are similar to that of pulmonary tuberculosis. Here we are presenting a case on Pulmonary Nocardiosis in a 33-year-old male HIV patient having complaints of fever, cough with expectoration and anorexia for 5 days. Chest X ray depicted the presence of fibrocavitatory lesions in mid and lower zones with a bilateral pleural effusion, predominant on left side. Sputum culture showed absence of acid-fast bacilli (AFB) and revealed presence of gram-positive organisms suggesting few Nocardia like species. Patient was given with line of treatment for pulmonary nocardiosis and was symptomatically better within 5 days of treatment. Pulmonary nocardiosis has to be considered under differential diagnosis while suspecting pulmonary TB with fibrocavitatory lesions. In case of suspected radiological finding along with a negative AFB culture report, testing for Nocardia species should be considered in the HIV positive patients and should be started on empirical therapy to prevent further worsening of condition.

Keywords: *Nocardia, Pulmonary Nocardiosis, HIV, Immunosuppressive therapy, Immunocompromised.*

PT/ST5/009

ASSOCIATION OF EXTENSOR POLLICIS LONGUS INJURY IN ADDITION TO DE QUERVAIN'S TENOSYNOVITIS WITH MOBILE PHONE USAGE

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Abstract: Musculoskeletal problems frequently occur among mobile phone users. The repetitive movements of the thumb can cause with pain over the radial styloid and tender swelling of the extensor compartment and produces the symptoms of De Quervain's tenosynovitis disease and sometimes can also cause extensor pollicis longus (EPL) tenosynovitis. Upper back or neck pain or simply "text neck" generally occurs due to the excessive use of mobile phones as well as other hand-held devices over prolonged period of time. The aim of current investigation was to study the extent of association of Extensor Pollicis Longus injury in addition to De Quervain's tenosynovitis and Neck and Shoulder Pain with the mobile phones use. It was a prospective observational study surveyed by filling questionnaire either online or on paper where 1526 respondents had taken part. The wrist/ thumb pain and its intensity, were associated with average time of the mobile phone use and width of the smart phone screen. The neck/ shoulder pain, its intensity and physical and mental stress at the end of the day were associated degree of neck tilt, body posture while using the smart phone, hand usage while talking over the phone. In conclusion, our data suggests that the respondents are either suffering from or will develop De Quervain's tenosynovitis with EPL in the long run. The neck and shoulder pain that is experienced by the respondents due to faulty posture while using the mobile phones.

Keywords: *Text thumb, text neck, mobile phone gaming, social media, WhatsApp, body posture*

PT/ST5/011

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PERCEPTION OF COVID-19 VACCINE AMONG THE GENERAL PUBLIC OF MYSURU CITY.

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Abstract: Vaccine hesitancy is one of the top ten global public health threat as declared by WHO (World Health Organization) and the same is influenced by individual's knowledge, attitude and perception towards vaccination. This study aims at assessing the knowledge, attitude and perception of COVID-19 Vaccine among general public of Mysuru city. An anonymous population based cross sectional study was conducted among 1901 participants of Mysuru city. Participants above the age of 18years and current resident of Mysuru city were enrolled in the study. This study was conducted in three phases, Phase1: development, validation and translation of questionnaire into local language(kannada); Phase2: Questionnaire was distributed through online platforms and data was collected& Phase3: data analysis. A total of 1901 study participants were involved in the study and 1223 of them were women (64.33%). One of the goals of this study was to evaluate vaccine hesitancy, it was discovered that 1882 (99%) of the study participants had received their vaccinations. Comparing the variables with their KAP we found that the male had more knowledge than female (score=4.2168, p-0.093), similarly participants with insurance (score=4.6622, p-0.000) and infection with COVID-19 prior to this study (score=4.2628, p-0.045) had more knowledge. Participants who were uninfected (score=14.6667, p-0.000) and did not have medical insurance (score=14.6477, p-0.036) showed positive attitude, while uninfected participants had positive perception (score=28.5799, p-0.081). Understanding the Knowledge, Attitude and Perception of COVID-19 vaccine among general public helps us to identify the Knowledge gaps, beliefs and behavioural pattern that may facilitate improvement of vaccination drive, decoding myths regarding vaccine and in removing the vaccination barriers.

Keywords: *COVID-19 vaccine, Hesitancy, Knowledge, Attitude& Perception*

PT/ST5/012

PREDICTION MODEL OF VACCINE FOR HIV: HYPOTHESIS TO THE FACT

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Abstract: Virus has dominance over all organisms since long time. Although many medicine and vaccine available for most of virus, HIV virus become puzzle till date. HIV virus utilizes reverse transcriptase enzyme as a weapon and attack on CD-4 cells and make it paralyze. Virus having ability to utilize the metabolic machinery of host is old concept. This strategy is an access generated by the HIV to attack CD-4 cells. The mechanism includes the lock-key model at receptor level by attachment to GP-120 protein. In this regard we have prepared the model, using lab accessories to represent virus-antigen and CD-4 cells of the host. We have demonstrated that GP-120 nob bounces back away from CD-4 cell due to antigenic macrophages attack by chemotactic movement preventing the action of the reverse transcriptase enzyme and arrest the genome work into the host. Finally, if our model works then the conversion of HIV to AIDS can be prevented.

Keywords: *HIV, CD-4 cells, Reverse transcriptase enzyme etc.*

PT/ST5/014

IMPLEMENTATION AND EVALUATION OF NEWLY DEVELOPED AND VALIDATED INHALED MEDICATION ADHERENCE QUESTIONNAIRE (IMAQ)

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ABSTRACT: Asthma and chronic obstructive pulmonary disease (COPD) are chronicrespiratory diseases in which medication adherence is considered critical, in order tomaximize the advantages of treatment. Medication adherence questionnaires are one of the easiest means to assess adherence. We aimed to implement and evaluate a newly developed and validated inhaled medication adherence questionnaire for chronic respiratory diseases. Asthma and COPD patients receiving inhaled medication, without cognitive impairment and any critical illness were screened and randomised into four arms (control and intervention), 2 for each respective disease. The Medication adherence Rating Scale (MARS) and newly developed and validated questionnaire, Inhaled Medication Adherence Questionnaire (IMAQ) were administered at baseline, 1st, and 2ndfollow-up. Patient counselling was provided to patients in the interventional groups of both asthma and COPD at baseline,1stand 2ndmonth.Follow-up was done through telephonic interviews. The obtained mean scores were compared using one-way ANOVA.A total of 142 out of 150 enrolled patients completed the study. At baseline, there was no significant difference in the MARS and IMAQ questionnaire scores among the four arms. However, on follow up, there was a significant ($p < 0.05$) change in mean scores observed for MARS and IMAQ questionnaires in both asthma and COPD interventional groups, which signifies improved medication adherence. The change in mean scores obtained from both questionnaires were similar. IMAQ questionnaire could additionally assess the factors of non-adherence. This study could interpret that the newly developed IMAQ questionnaire was able to capture the change in adherence similarly as MARS questionnaire, in addition it could also identify the factors affecting the non-adherence.

Keywords: *Asthma, COPD, Questionnaire Medication adherence, Patient counselling, Chronic respiratory disorders.*

PT/ST5/015

EPIDEMIOLOGICAL STUDY OF ANEMIA DURING GESTATIONAL PERIOD AND ITS MANAGEMENT

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Abstract: A prospective observational study conducted for six months at the in-patient department of a tertiary care hospital to detect the number of patients suffering with anemia during gestational period and review the treatment patterns in the management anemia and its further complications. Patients who were admitted to the hospital during the six-month study period were enrolled using a suitable designed data form, details of the patient were collected from patient demographics, prescription charts, laboratory data, medical records, doctor's notes, and nursing notes. A high prevalence of anemia in pregnant women leads to increase of maternal and foetal risks. Our study which includes 120 samples of pregnant women showed the prevalence of anemia in 80 patients. In this study prevalence of anemia in pregnancy is more in subjects below 25 years of age, compared with above 25 years of age and prevalence of anemia in pregnancy is more in patients with diseased conditions, compared with normal women with pregnancy. Prevalence of anemia in pregnancy is more in patients with multiple pregnancies compared with first pregnancy. Based on our study the pregnant women who are educated are non -anaemic and non-educated are anaemic, hence all the women should be properly educated about the anemia and its consequences in pregnancy.

Keywords: *Pregnancy, Anemia, Gestational Period, Prevalence, Management, Hemoglobin.*

PT/ST5/016

EFFICACY OF DAPAGLIFLOZIN AND INSULIN IN PATIENTS WITH UNCONTROLLED TYPE2 DIABETES MELLITUS.

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Abstract: Dapagliflozin is a highly selective and reversible Sodium-Glucose Co Transporter 2 (SGLT 2) inhibitor used in the management of type 2 diabetes mellitus. It reduces the glycosylated haemoglobin (HbA1c) levels in a dose-dependent manner when used along with other antidiabetic medications and also causes weight lose thereby improving insulin receptor sensitization. Efficacy of dapagliflozin and insulin in patients with uncontrolled type2 diabetes mellitus was studied. The subjects were categorized based on their age and gender. Subjects were included according to inclusion criteria such as, patients with T2DM, ages within 30-70 years, HbA1c ≥7%, patients using Insulin, Metformin and Dapagliflozin. Efficacy parameters such as Fasting Blood Glucose (FBS), Post Lunch Blood Glucose (PLBS), HbA1c, blood pressure and body weights were assessed and recorded. Out of 100 cases, 40 % were male and 60 % were females. The commonest age group was 51-60 years. FBS, PLBS, HbA1c, Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DBP), and body weights were found to be reduced significantly when Dapagliflozin and Insulin therapy was initiated. Dapagliflozin is a promising add-on therapy that promotes glucose utilization by reducing the body weight in patients with uncontrolled type 2 diabetes mellitus.

Keywords: *Type 2 Diabetes Mellitus (T2DM), SGLT 2 inhibitor, Dapagliflozin, Glycosylated Hemoglobin (HbA1c), Insulin, Metformin.*

PT/ST5/017

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PERCEPTION OF HEALTH PROFESSIONS STUDENTS TOWARDS PATIENT SAFETY

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Abstract: Patient safety is the prevention of healthcare-associated errors and adverse events from happening to patients. As stewards of patient safety, health professionals are the key partners guaranteeing the protected and normal utilization of medication by maintaining the rights of patients. Safe health care depends on efficiently trained individuals with the best roles and responsibilities acting together. Measuring health care professionals' safety culture through service is a useful tool to understand the areas that need improvement. We conducted this study to assess the knowledge, attitude and perception of health professions students towards patient safety. The questionnaire was developed and validated. This questionnaire was divided into three domains: Knowledge, Attitude and Perception. The questionnaire was distributed in a printed or web-based form and the response was collected which was archived into a Microsoft Excel sheet. The collected response was analyzed using suitable statistical analysis. A total of 1102 participants were enrolled and females [680 (61.7%)] were predominant. Among the participants, A majority were nursing students [416 (37.74%)] followed by pharmacy [370(33.57%)], medical [204(18.51%)] and dental [12 (10.16%)]. The study showed that the dental students had more knowledge (0.5771 +/- 0.134, P=0.002) whereas, the pharmacy students had better attitudes (3.85 +/- 0.487, P=0.003) and perception (3.92 +/- 0.478, P=0.002) towards the patient safety. Knowledge, attitude and perception among the health professions students were satisfactory. We observed that most of the students were aware of preventable medication errors. A majority of the participants [457 (41.4%0] expressed that peer-led education, inter-professional education can upgrade students understanding of patient safety concepts.

Keywords: *Patient Safety, Health Profession Students, Knowledge, Attitude, Perception*

PT/ST5/018

COMPARISON OF EFFICACY AND COST EFFECTIVENESS OF ORAL IVERMECTIN AND PERMETHRIN IN SCABIES PATIENTS.

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Abstract: Scabies is a contagious and intensely itchy skin condition caused by a mite known as sarcoptesvarhominis. This study was conceived to compare the efficacy and cost effectiveness of oral ivermectin and permethrin in scabies. A prospective observational study was conducted in a 500 bedded tertiary care teaching hospital. As per inclusion and exclusion criteria 94 patients enrolled in the study. Then compared the efficacy of oral ivermectin and permethrin in patients using Visual analogscale, Verbal rating scale and Numerical rating scale during baseline and follow-up. Cost effectiveness was determined by Incremental cost effectiveness ratio. For each group, 47 patients treated with oral ivermectin and permethrin. Visual analogue scale response before and after treatment for permethrin and Oral ivermectin was 3.60±1.68 and 6.08±1.23 with p value 0.00 which is statistically significant. Verbal rating scale response before and after treatment for permethrinand oralivermectin was 1.39±0.38 and 1.40±1.03 with p value 0.00 which is statistically significant. Numerical rating scale response before and after treatment was 3.90±1.08 and 6.53±1.21 with p value 00.0 which is statistically significant. For cost effectiveness analysis, mean difference in the effect of permethrin and oral ivermectin was 0.149 and mean difference in cost is 725.9. Incremental cost effectiveness ratio was -48.651. Incremental cost effectiveness ratio's slope at 95th confidence interval obtained at 4th quadrant which shows oral ivermectin was cost effective drug. This study demonstrates that both drugs were efficacious for scabies. But compared to permethrin, oral ivermectin showed greater improvement in pruritus assessed by using Visual analogscale, Verbal rating scale and Numerical rating scale, oral ivermectin was the cost-effective treatment option for scabies.

Keywords: *scabies, oral ivermectin, permethrin, visual analogue scale, verbal rating scale, numerical rating scale.*

PT/ST5/020

ASSESSMENT OF ADVERSE EVENTS FOLLOWING IMMUNISATION OF THE COVID-19 VACCINES - A CROSS SECTIONAL STUDY

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Abstract: The Coronavirus 2019 (COVID-19) pandemic has wreaked havoc across the globe. As a result, a vaccination campaign against COVID-19 was initiated on January 16, 2021 in India. Furthermore, when a global mass vaccination campaign was rolled out, certain severe and uncommon Adverse Events Following Immunization (AEFI) was observed. Hence, the study was carried out to assess the different adverse events following immunization of the COVID-19 vaccines. A prospective cross-sectional study was conducted among 465 vaccinated subjects for a period of six months. Individuals who had taken at least one dose of COVID-19 vaccine were included in the study. All the relevant information was collected using the peer-validated survey questionnaire. Most of the respondents were between 30–60 years of age, and 56.6% were male. Out of 465, 154(33.1%) were partially vaccinated and 311(66.8%) were fully vaccinated. Majority 311(66.8%) of the study participants had taken the COVISHIELD vaccine. In our study, 334(71.8%) of vaccinated responders complained about AEFI. The most common AEFIs reported were pain (18.3%) and fever (18.2%) followed by chills (12.9%), and swelling (7.4%) at the site of injection. In summary, 33.1% of the participants had experienced AEFI.However, no deaths or serious adverse events were reported in the study. Nevertheless, follow-up after vaccination is needed to prevent immunologic responses that may occur in some patients.

Keywords: *Vaccine, COVID-19, Adverse Effects, Immunization*

PT/ST5/021

COMPARISON OF AMISULPRIDE WITH ADD-ON THERAPY OF YOGA AND COGNITIVE BEHAVIORTHERAPY IN NEGATIVE SYMPTOMS OF SCHIZOPHRENIA

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Abstract: Schizophrenia is a disorder that impairs a person's capacity for coherent thinking, feeling, and behaviour. Schizophrenia affects around 3/1000 people in India. To compare the Amisulpride with add-on therapy of yoga and cognitive behaviour therapy in negative symptoms of schizophrenia. A quasi-experimental study was conducted among 188 schizophrenic patients with negative symptoms recruited from the department of psychiatry. The subjects were observed in three groups, Amisulpride-200mg (GroupA), Amisulpride + CBT (Group B), and Amisulpride + CBT+ YOGA (Group C). The observation was done between 0-24 weeks. During the observation, the Positive and Negative Syndrome Scale (PANSS)was used for assessing the negative symptoms of schizophrenia, and the RAND corporation 36-Item Short Form Health Survey (SF-36) and Medication adherence Rating Scale (MARS)questionnaire were used for assessing the patient's Quality of Life (QOL), and medication compliance respectively. In group C, there was a significant improvement (reduction in symptoms) on PANSS from the 4thweek onward ($P<0.01$), which inevitably enhanced the patient's QOL and increased medication compliance. This study reveals that patients with negative symptoms did not initially respond to CBT, but after treatment with drugs, yoga, and later CBT, negative symptoms of schizophrenia dramatically improved.

Keywords: *Non-pharmacological, Negative symptoms, Schizophrenia, Amisulpride.*

PT/ST5/023

A REGION WISE SURVEY OF KNOWLEDGE ABOUT TRAVEL-RELATED INFECTIOUS DISEASES AMONG COMMUNITY PHARMACISTS

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Abstract: Community pharmacists 'knowledge regarding management of travel related infectious diseases can directly benefit the general public. The main aim is to assess knowledge of community pharmacists regarding travel related infectious diseases. Knowledge-based questionnaires were developed and validated for malaria, dengue, gastroenteritis and COVID - 19. The questionnaire was circulated to selected community pharmacists in certain districts of South Indian States (Tamil Nadu, Kerala, Karnataka, and Andhra Pradesh) through google form links to their mobile numbers or email addresses. The responses were collected and analyzed. Among 450 enrolled pharmacist 415 were responded to questionnaire. There were about 25% of respondents from each South Indian state among the 415 responses; 237 (57.10%) male and 143(42.89%) female community pharmacists responded. About 79% of responders had a graduate pharmacy degree, 26.5% were pharmacy diploma holders and 2.1% of them had a postgraduate degree in pharmacy. With respect to dengue fever, > 70% of pharmacists had fairly good knowledge except for the vector responsible for causing the disease. More than 50% of the responders had good knowledge about malaria, except for the choice of drug for preventive therapy in pregnancy and availability of a malaria vaccine. Most of the pharmacists (> 80%) had good knowledge about COVID-19, about 45% of them showed good understanding about gastroenteritis. Responders from Kerala fared better than those from other states. Knowledge of community pharmacists about certain infectious diseases was satisfactory, providing opportunities to expand their knowledge is encouraged.

Keywords: *Travel related infectious diseases, Dengue, Malaria, COVID-19, Gastroenteritis, Community pharmacists.*

PT/ST5/025

POST COVID RESPIRATORY SEQUELAE AND THEIR MANAGEMENT IN A TERTIARY CARE TEACHING HOSPITAL

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Abstract: A broad spectrum of symptoms that develop during or after COVID-19 (Coronavirus) and continue for ≥ 2 months have an impact on the patient's life. The present study was conceived to assess the post-COVID respiratory sequelae and their management. The post-COVID respiratory symptoms were identified in patients with and without comorbid respiratory conditions based on history, physical examination, and clinical investigation like spirometry, chest x-ray, and CT thorax. COVID patients were categorized into acute and long COVID. Their pharmacological treatment was analyzed. A retrospective cross-sectional study was conducted on 100 COVID-confirmed patients. 74.7% and 22.7% of patients showed respiratory and non-respiratory symptoms. 45.3%, 39.4%, 69.2% of patients had breathlessness, cough, or wheeze that is more likely to occur in the 1st month of history of COVID, and 31% of patients had a cough that is more likely to occur in > 2 months of COVID. 51.4% and 64% of patients with or without respiratory comorbidities had long COVID. The post-COVID respiratory symptoms were found to be breathlessness, cough, and wheezing. The acute COVID symptoms were breathlessness, cough, wheezing and long COVID symptoms were chest tightness, fatigue, wheezing and cough. 7.5%, 4.4% and 5.6% of patients used Neb. Ipratropium Bromide and Formoterol, Cefixime, and corticosteroids, respectively.

Keywords: *Post COVID, Pharmacological treatment, Long COVID, Respiratory comorbidities.*

PT/ST5/026

AN UPDATE ON EFFICACY AND SAFETY OF ALPHA BLOCKERS IN THE TREATMENT OF DISTAL URETERIC STONES: NARRATIVE REVIEW

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Abstract: Alpha-blockers prescribed as medical expulsion therapy (MET) have replaced minimally invasive procedures as the primary line of treatment for minor ureteric stones. This study aims to investigate the efficacy of MET with alpha-blockers in terms of stone expulsion rate and time, evaluate the safety of several alpha-blockers. The materials used in this study were Google Scholar, PubMed, and Web of Science databases were searched for relevant publications using keywords published between December 2013 and August 2021.As a result, it was determined the efficacy and safety of alpha-blockers as a MET for the management of distal ureteral stones, 15 studies were included, 12 randomized control trials (RCTs), 2 retrospective observational studies, and 1 prospective study. The most commonly studied primary endpoint was stone expulsion rate and time. According to findings, silodosin appears to be more effective than other alpha-blockers. The data revealed no life-threatening adverse effects were associated with alpha-blockers. The study concluded as; Alpha-blockers are recommended as the first-line therapy for distal ureteral stones. Silodosin was the most efficacious medicine, according to the data. The side effects of alpha-blockers, on the other hand, were minor, consisting primarily of orthostatic hypotension. The alpha-blocker choice differs from urologist to urologist in the management of MET, depending on their experience and the patient's condition.

Keywords: *Alpha-blocker, distal ureteric stones, medical expulsion therapy, efficacy, safety*

PT/ST5/029

A STUDY ON EVALUATION OF POTENTIAL DRUG-DRUG INTERACTION AMONG CORONARY ARTERY DISEASE PATIENTS IN A TERTIARY CARE HOSPITAL

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Abstract: Drug – drug interactions is defined as "two or more drugs interacting in such manner that the effectiveness or toxicity of one or more drug is altered". The implication of multiple drugs during the treatment of cardiovascular disease leads to Polypharmacy, leaving patients vulnerable to drug interactions. This study attempts to assess the incidence, risk rating and possible predictors of potential drug-drug interactions (pDDIs) among patients with coronary artery disease. A prospective cross-sectional study was conducted in cardiac care unit on 171 subjects. The study included patients with a minimum of two drugs in the prescriptions. The prescriptions were analyzed for the pDDIsusingUptodate™ Online software. The results showed that among 171 patients, 929 pDDIs were identified. The average number of potential drug interactions found in these patient's prescriptions was 4.4 ± 2.4 per prescription. Age wise distribution indicates that the majority of pDDI were among the age group of 60-70 years (36.8%) followed by 46-59 years (33.9%)age group. Among the 929 potential DDIs, 179 (19.26%) were major, followed by 595 (64.15%) moderate, and 154 (16.59%) minor interactions. Among the total drug interactions, 555 (59.74%) belonged to the risk category C, 132 (14.2%) were risk category D, and 75 (8.07%) were risk category B. Around 3 (0.32%) of pDDI category This study indicates that hospitalized Coronary Artery Disease(CAD) patients have a significant portion of clinical DDIs. In order to avoid these interactions and manage hospitalized patient's medication in a safer manner, clinical pharmacists play a crucial role.

KEYWORDS: *Drug-Drug Interactions, pDDI, coronary artery disease,*

PT/ST5/030

PROSPECTIVE STUDY ON DRUG RELATED PROBLEMS IN PATIENTS WITH CHRONIC DISEASE AT TERTIARY CARE HOSPITAL

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Abstract: Chronic diseases are among the most prevalent and costly health conditions all over the world. The prevalence of chronic disease increases with advancing age, and therefore, elderly patients tend to use more medication than younger patients. Of the risk factors, advanced age has been associated with a substantially increased risk of acquiring drug-related problems. This study aims at analysing various drug related problems and the factors leading to drug related problems among patients with chronic diseases. It is a prospective observational study and was conducted for a period of 8 months. Treatment records of all patients satisfying inclusion criteria were analysed and reviewed on a daily basis during the hospital stay for any type of DRP. Once DRP was identified, the probable cause was analysed. The results showed that out of 196 patients, 138 (70.41%) were males and 58 (29.49%) were females. The majority of patients were in the age group of 41–60 years. Out of 196 patients, 106 patients developed 141 drug-related problems. DRPs related to the effect of drug treatment not optimal (46.81%) were identified as the major DRPs, followed by unnecessary drug treatment (23.40%) as the second major DRP. While drug selection was the main cause (n = 74, 39.36%), The chi-square test showed that the body mass index had a positive statistical association with drug-related problems. It is concluded that DRP is a major concern that must be addressed due to the increasing trend among the elderly and vulnerable population.

Keywords: *Drug related problems, chronic disease*

PT/ST5/032

EFFECT OF END-STAGE RENAL DISEASE AND ACUTE KIDNEY INJURY ON ICU PATIENTS WITH SEPSIS

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Abstract: Sepsis is the most common cause of acute kidney injury (AKI) and end-stage renal disease (ESRD)in critically ill patients**.** To assess the incidence, clinical outcomes, and antibiotic sensitivity of AKI and ESRD sepsis patients admitted to intensive care unit (ICU). A retrospective study conducted at Sri Ramachandra Institute of Higher Education and Research (DU) for a period of 6 months. Data collected from the electronic records of the ICU patients with septic non- kidney injury (KI), septic AKI, and septic-ESRD admitted during 2017-2021. 109 cases were taken of which 10 cases were septic ESRD, 47 cases were septic AKI, and 51 cases were with septic non-KI. The mortality rate was more in septic ESRD with 90% than in septic AKI (58.3%) and septic non-KI (84.3%) patients. Organ dysfunction was more in septic ESRD patients with respiratory and multi-organ dysfunction syndrome (MODS). Infections were likely to be caused by gram -ve micro-organisms. Incidence of AKI is quite common in sepsis patients admitted to ICU. Even though the mortality rate and multi-organ failure were high in septic ESRD patients than in septic AKI and septic non-KI patients. Restoring the hemodynamic status at earliest may prevent organ failure.

Keywords: *Mortality, renal function, multi-organ dysfunction*

PT/ST5/034

A COMPARATIVE STUDY: RISK FACTORS OF ACUTE CORONARY SYNDROME AMONG YOUNG AND OLDER PATIENTS

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Abstract: Acute coronary syndrome (ACS), refers to a group of conditions that suddenly stop or severely reduces blood flow to the heart muscles such that a part of heart muscles is unable to function properly or dies. When compared with older population acute coronary syndrome is low in youth. The aim of this study was to assess the risk factors of Acute coronary syndrome among younger and older patients. A comparison study was conducted in a 700 bedded tertiary care teaching hospital, for a period of 1 year. The population of the study included is 286 patients. Patient were divided into two groups, 1) elderly $\geq$ 60 years 2) younger < 60 years. Equal numbers of patients were included in each group. Data collection focused on patient demographics, reason for admission, final diagnosis, past medical history, Eelectrocardiogram findings, laboratory investigations etc. The mean age was 56.2 $\pm$ 7.7 and 71.8 $\pm$ 6.24 for young and older patients respectively. The study clearly shows male predominance with a percentage of 67.83 % and female with 32.7%. Dyslipidaemia, physical inactivity, hypertension was the most significant risk factor for Acute coronary syndrome in elderly (p value < 0.001), while smoking, alcoholism was in younger patient (p value < 0.001) compared to older patients. Younger patients with Acute coronary syndrome had different atherosclerotic risk profile compared with older patients. Emphasis should be given on the proper management of major modifiable risk factors.

Keywords: *Acute coronary syndrome, dyslipidaemia, risk factors, hypertension.*

PT/ST5/037

SODIUM-GLUCOSE CO-TRANSPORTER 2 INHIBITORS ASSOCIATED RISK OF URINARY TRACT INFECTION AND GENITAL MYCOTIC INFECTION IN TYPE-2 DIABETES MELLITUS PATIENTS IN TERTIARY CARE HOSPITAL

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Abstract: Sodium Glucose cotransporter -2 inhibitors (SGLT2i) are found to improve the cardiac and renal functions, but its mechanism of lowering blood glucose by promoting glucose excretion in urine increases the risk of Urinary Tract Infection (UTI) & Genital Mycotic Infection (GMI). US-FDA issues warning about its potential to cause UTI & GMI, despite its benefits. But recent reviews of US Database failed to uncover evidence of increased risk of UTI & GMI on SGLT2i users. These conflicting reports paved way for our study. To Study the risk of UTI & GMI associated with use of SGLT2i in Type-2 Diabetes Mellitus (T2DM) patients in tertiary care hospital. Observational Prospective Cohort study conducted for a period of 6-months. T2DM patients who are newly initiated with Sulfonylurea (SU) / Dipeptidyl peptidase 4 inhibitors (DPP4i) / SGLT2i along with Metformin are represented as separate groups respectively. Treatment group A (metformin+SU), B (metformin+DPP4i), C (metformin+ SGLT2i). The risk of UTI & GMI was assessed using UTI & GMI assessment Questionnaire. Medication adherence was ensured with Medication Adherence Rating Scale (MARS) score. Statistical analysis is done on data received, after 12-week follow-up with 477 participants. On comparison between groups, risk of UTI among those who are newly initiated with SGLT-2 found to be statistically higher, with P value <0.027; on comparison within SGLT-2i group, Empagliflozin was found with higher incidence of UTI statistically by using Pearson Chi Square test. But, risk of GMI among those who are newly initiated with SGLT-2i found no statistical significance.

Keywords: *SGLT-2I, SU, DPP 4i, UTI, GMI.*

PT/ST5/039

EFFECT OF COMPLIMENTARY MEDICINES IN ANAEMIC PATIENT

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Abstract: To find out the indiscriminate use of a complimentary medicines and their various affect in different types of anaemic patients and are used as a supplementary medicine in determining various therapeutic effect. Multivitamins, fish oils, vitamin C, glucosamine and probiotics were the five most popular CMs. 72% of people using CMs rated their products as 'very effective' or 'effective enough'. To evaluate the effect of complimentary medicines in anaemic patients. A prospective, observational and descriptive study was carried out for a period Three months from January 2022 to April 2022 in the inpatient departments of pediatric, ICU, surgery, general medicine, obstetrics and gynecology department in CSI Holdsworth Memorial (Mission) Hospital, a tertiary care hospital in Mysore District, with aim of effect of complimentary medicines in anaemic patientsin a tertiary care setting. On daily basis, treatment sort reviewed for presence of complementary medicine in patient suffering from anaemia, thus hemoglobin level and Blood glucose levels are measured. Other demographics details and a co-moiety including social history, collected at the time of admission. the co relation between the effect of complementary medicine in anaemic patients will be analyzed. Thus, result will be demonstrated in the form of deviation from the Normal values to Observed values. Haematological lab investigation will be carried out to Correlate the effect and outcomes of complimentary medicines. This study clearly highlights the different complimentary medicine usage in hospital setting. a total of 30 anaemic patients were enrolled in the study of which male: 14(46.66%) and female: 16(53.33%). Vitals recorded ideally was found to be BP: 130/90 mmHg, Spo2: 98% and PR: 84bpm.the base line Hemoglobin was found to be 6.5g% and at the end of discharge was found to be 9.8g%. the complimentary medicines prescribed prescribed for all enrolled patients showed increased hemoglobin level. This study showed that the Hemoglobin concentration level improved gradually in anaemic patients who are prescribed with Complimentary Medicines at different levels of the health care delivery system and become a standard to assess the treatment management in anaemic patients.

Keywords: *Anaemia, Effect of complimentary medicines, Hemoglobin level, Tertiary care Hospital*

PT/ST5/045

A META-ANALYSIS ON MISUSE OF PRESCRIPTION/OTC DRUGS: HOW PHARMACIST CAN PREVENT AND MANAGE DRUG ABUSE

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Abstract: Drug misuse is a critical issue related to both physical and psychological health associated with growing threats across the world. The role of pharmacist in preventing drug abuse is crucial to address the prescription/OTC medication misuse. To synthesize the research on misuse of prescription/OTC drugs, role of pharmacist in preventing and managing the prescription/OTC medications induced health conditions and to provide methodological guidance for further research. Systematically searched epidemiological researches on the topics relevant to the study through PubMed and EMBASE from 2017 to 2022 (n = 3022), studies are screened by title/abstract (n = 981) and full text articles are assessed (n = 153). The studies included for meta-analysis (n = 12) are selected by applying inclusion and exclusion criteria. Stata 17.0 and GraphPad prism 8.0.1 are used to analyse the data. Out of 12 research articles, 6 were conducted on misuse of OTC medications and prescription medications and another 6 were conducted on both interventional and observational studies about the methods of prevention and management of the drug abuse by pharmacist. We analysed data through odds ratio, 95% CI at p-value of 0.317 by plotting forest plot. The median odds ratio is found to be 1.6 (3.67, 2.635) with 95% CI. Publication bias and Heterogeneity are graphically represented through Funnel plot and Galbraith plot respectively. We concluded that the drug misuse is the global burden and pharmacist can endeavour to offer the management and prevention of drug abuse.

Keywords: *Prescription drug misuse, OTC medication abuse, Opioid abuse, Meta-analysis.*

PT/ST5/046

PHYSICIANS' PERSPECTIVE TOWARDS DEPRESCRIBING OF MEDICINES IN CHRONIC DISEASES: A QUESTIONNAIRE-BASED STUDY

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Abstract: Deprescribing is the process of reconstructing multiple medication use by review and analysis, which concludes with the modification, replacement or elimination of drugs. Medications that were once appropriate may become inappropriate due to old-age-related physiological changes that increase the risk of harm from medications metabolized by the liver and kidneys and other co-morbidities. The essence of deprescribing is rarely known and in use among physicians, hence, this study focuses on understanding their attitudes and creating awareness which is the first step toward implementing the deprescribing process. A cross-sectional questionnaire-based study was conducted which included 75 physicians. Physicians were asked to fill the Perceptions, Attitudes and Challenges of Physicians towards Deprescribing (PACPD-12) Questionnaire. 76% of Physicians felt that deprescribing was needed to reduce the harm to patients. The involvement of multiple prescribers (54.6%) was the main challenge faced by physicians. 92% of physicians stated that deprescribing was beneficial in the current clinical scenario, and 89.3% wanted to make deprescribing a point in daily practice. They showed a strong positive attitude towards deprescribing. In view of reducing potential medication-related adverse events, daily practice of the deprescribing process should become a norm, thereby improving the quality of life.

Keywords: *Deprescribing, Physicians, co-morbidities, elderly patients.*

PT/ST5/047

CHIKUNGUNYA AND IT'SPOST ARTHRALGIA COMPLICATIONS

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Abstract: Chikungunya (CHIK) is a mosquito borne crippling disease spawned by CHIK virus i.e., alphavirus belonging to the family Togaviridae.The. The word 'Chikungunya' itself means 'that which bends' for which no specific vaccines and therapeutics are available. The purpose of this review is to evaluate the post complications especially focusing on arthralgia and its clinical presentation, risk factors, biological markers, diagnosis and factor affecting the development. Post complications were summarized as joint, psychological, dermatological, drug-induced and neurological that shows weak linear relationship among them. It was concluded that a potential long-term complication of CHIKV infection is arthralgia. characterized by swelling and intense body pain which lasts for months to years. Arthralgia prevalence rates were estimated to be 52.17%, 27.21% and 14.19% at 6, 12and 18 months post CHIKV infection respectively. Objective of this review was to find the stumbling block and the major hitch was presumed that arthralgia is poorly responsive to analgesics and patient with long term arthralgia do not display any accurate biological markers typically found in autoimmune or rheumatoid disease thus making it hard to detect and diagnose it clinically hence Arthralgia remains the most critical and neglected complication among others that requires recommended management and accurate diagnosis.

Keywords: *CHIK, CHIKV*

PT/ST5/048

IMPACT OF THIAMINE SUPPLEMENTATION IN THE MANAGEMENT OF DIABETIC PERIPHERAL NEUROPATHY- A RANDOMIZED TRIAL

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Abstract: Diabetic peripheral neuropathy (DPN) is one of the major microvascular complications of Diabetes Mellitus. Studies have suggested that thiamine deficiency is observed in diabetes mellitus and predominantly in DPN patients. In this study, we analyzed the incidence of thiamine deficiency and studied the effects of thiamine supplementation in DPN patients. A randomized trial study was carried out during Dec 2020 - Dec 2021.Diabetic peripheral neuropathy patients clinically diagnosed with depleted nerve conduction velocity (<50 meters/second), elevated homocysteine (>15micromoles/L) were included in the study. Patients were grouped into two groups. One group received thiamine 75mg/day along with other antidiabetic medications and pregabalin, while another group received B-complex with 10mg/day thiamine. Nerve Conduction Velocity was carried out for every three months till 6 months end point. The study was approved by the Institution Ethics Committee St Peters-IEC/2021/II/08. 84 patients were included and were randomized based on randomized permuted blocks. 76 patients (group I- 40 patients, group II- 36 patients) completed the study. Lower levels of thiamine is observed in many patients (54/76, 71%). Thiamine group showed significant improvement in glycaemic profile. FBS(p=0.0024), HbA1c(p<0.001). No significant adverse drug reaction and hypervitaminosis are noted in both groups. Thiamine as a supplement has shown significant impact on glycaemic profile as well as neuropathy.

Keywords: *Diabetes Mellitus, Thiamine, diabetic neuropathy.*

PT/ST5/049

DEVELOPMENT AND VALIDATIONOF SELF-ADMINISTERED INTERNET ADDICTION SCALE(SAIAS-10)

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Abstract: Screen addiction is more menacing than drug addiction. The number of people using the internet has skyrocketed during the past two decades. Clinical instances displaying misuse symptoms have emerged in the midst of its rising popularity. The existing scales for assessing internet addiction were devised years ago and are lengthy, hence our primary objective was to develop a novel 10-item short self-diagnostic scale that can detect internet addiction disorder in addition to being simple and brief. Apart from referring to Young's Internet Addiction Test (IAT) and Chen's internet addiction scale, International Classification of Diseases (ICD-10) criteria for dependence syndrome like craving, tolerance, withdrawal, use despite harm, salience and loss of control were taken into account while developing the scale. The secondary objective was to perform its reliability and validity. The scale was administered to a total of 1057 participants(493-males,564-females) with ages ranging from 14-24years. The reliability of the scale was evaluated using test-retest methodology which was computed using Pearson's r value (0.98) and internal consistency which was gauged using Cronbach's alpha (0.91). Six experts judged face and content validity (content validity index= 1). Analysis was carried out using SPSS Software. The participants didn't report any difficulty in understanding the questions. The SAIAS-10 is a reliable and valid tool in screening internet addiction disorder. The SAIAS-10 is expected to aid in the clinical evaluation and research in the field.

Keywords: *Internet, Internet Addiction, Reliability, Validity, Scale.*

PT/ST5/050

PREVALENCE OF INTERNET ADDICTION DISORDER AND IT'S ASSOCIATION WITH DEPRESSION AND ANXIETY AMONG YOUNG STUDENTS

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Abstract: Internet has become an important tool to study for today's children. It has advantages, but it also has a lot of disadvantages. It has affected student's health both mentally and physically. The trend in the internet usage by today's youth is alarming with deleterious effects on health and academics. It has resulted in the emergence of an internet addiction disorder. This research primarily focused on determining the prevalence of such addiction amongst youth population using a validated semi-structured screening questionnaire. The secondary objective was to determine the association of internet addiction disorder with symptoms of depression and anxiety. This study was a cross sectional community-based survey. 1550 students from various schools and colleges around the campus belonging to age group of 14-24 years were chosen at random using stratified sampling. Internet addiction, depression and anxiety were measured using Self-Administered Internet Addiction Scale (SAIAS-10), Patient Health Questionnaire (PHQ-9), Generalised Anxiety Disorder (GAD-7) scales respectively.95% confidence interval was used to describe the prevalence of internet addiction disorder. Results revealed that out of 1550 students 12.6% (n=196) had no addiction,41.1% (n=637) had mild addiction, 36.8% (n=571) had moderate addiction and 9.4% (n=146) were severely addicted. It was found that there was a statistically significant association between internet addiction and depressive symptoms ($p<0.001$). The association between internet addiction and anxiety was also statistically significant ($p<0.001$). This research highlights the widely prevalent internet addiction pattern amongst the youth and the need to address it with utmost importance given its consequences on their mental health.

Keywords: *Internet, Internet Addiction, Questionnaire, Students, Health*

PT/ST5/051

VALSARTAN/SACUBITRIL AND VALSARTAN FOR TREATMENT OF HFREF: A SINGLE CENTER PARADIGM OF HF PATIENT IN INDIA

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Abstract: The prevalence of heart failure is increasing with age, an important cause of death and more common in men. The pathological left ventricular (LV) remodelling leads to systolic dysfunction (**HFrEF**), heart muscle is not able to contract adequately and, therefore, expels less oxygen-rich blood into the body. The aim of the present study was to examine the EF on clinical effect of sacubitril and valsartan, an angiotensin receptor Neprilysin inhibitor (ARNI) compared with valsartan in Indian patientsduring HF treatment. This was a prospective, observational study. 160 patients (>18 years) diagnosed with NYHA Class III, or IV HF; with reduced ejection fraction (EF)were enrolled into the study. Serum creatinine, glomerular filtration rate (GFR), Sodium (Na), potassium (K), Chloride (Cl) and ejection fraction (EF) were assessed for the efficacy of the treatment. The HF patients registered with ARB and ARNI; LVEF: 43.11±10.72 % and 33.63±8.24% respectively. The ARNI increased LVEF >5% in 71.25% patients. The angiotensin receptor-Neprilysin inhibitor (ARNI) Sacubitril/Valsartan combination showed significant result (P value <0.0001) on heart failure patients**.** The results suggest that Sacubitril/Valsartan was effective in improving the ejection fraction in individuals with cardio vascular abnormalities than in monotherapy with Valsartan group.

Keywords: *ARNI, ARB, ACEI, Sacubitril/Valsartan, LVEF*

PT/ST5/052

A PROSPECTIVE OBSERVATIONAL STUDY OF INDIA'S PSYCHOLOGICAL RESPONSE TO THE COVID-19 OUTBREAK IMPOSED LOCKDOWN

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Abstract: The novel coronavirus may have an impact on many facets of a functioning society, posing risks to both human safety and physical health as well as significant psychological stress to the general populace. The COVID-19 pandemic has changed daily life and brought unexpected changes that led to serious psychological reactions and a mental health problem. Our goal was to determine the prevalence of depression, anxiety, and stress in the Indian population during the lockdown and to look at their social-demographic connections.793 people took part in a 6-month study throughout the course of a web-based survey among the people of Tamil Nadu. A questionnaire was used to gather information on depression, stress and anxiety. Six of the questionnaire's statements are about stress, while seven are about depression and anxiety. Ratings are given on a series of 4-point likert-type scales, ranging from 0 (not at all) to 3 (all time). 90% of the 793 participants were between the ages of 18 and 28, and 54% of them were men. The majority of the study participants (70%) have UG degrees. The overall scores for anxiety, stress, and depression were found to be 75%, 78%, and 77%, respectively in which 80% of them responders are students. Despite being aware of coronavirus infections, a sizeable fraction of survey participants are greatly influenced by media information. The media affects psychological health and intensifies worry. Therefore, it will be advantageous to think about online mental health counselling.

Keywords: *India, coronavirus, depression, anxiety, stress.*

PT/ST5/053

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF MOTHERS TOWARDSTHEBRONCHIALASTHMA IN THEIR CHILDREN

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Abstract: Asthma is one of the most common chronic diseases with more than 300 million cases found worldwide. The aim of the study is to assess the knowledge, attitude and practice of mothers towards the bronchial asthma in their children and inhaler use. A cross sectional study conducted among mothers of asthmatic children who had been taking medicine for at least a year and using inhalers for minimum six months were included. Among 283 sample, most of the participants were in the age group of 30-40 years than the other age.71% participants have moderate knowledge about asthma myths and beliefs. 89% participants said it is best not to smoke or let anyone else smoke near asthma child. 44% had a positive attitude towards the statement everyone in the family is likely to have asthma if one member does. 61% study participants reported visiting an asthma clinic frequently, their knowledge scores were higher on inhaler use. The participants were found to have good knowledge of asthma symptoms, poor knowledge on physical activity towards asthma. Most of the asthmatic child mother had moderate attitude and poor practice towards diseases. For better control of asthma, more effort is needed to educate caregivers and to enhance their awareness about asthma at both hospital and community levels.

Keywords: *Bronchial asthma, Knowledge, Inhaler.*

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PT/ST5/054

STUDY ON ASSESSMENT OF PATIENT'S KNOWLEDGE, ATTITUDE AND PRACTICE ON HYPERTENSION AT A TERTIARY CARE HOSPITAL: DESCRIPTIVE CROSS-SECTIONAL OBSERVATIONAL STUDY

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Abstract: According to estimates, high blood pressure accounts for 7.1 million deaths worldwide, and about 13 percent of all fatalities. The purpose of this study is to evaluate the patient's knowledge, attitude, and practice and to raise awareness of hypertension among patients who already have the condition. In a six-month trial, 426 participants completed a questionnaire. A questionnaire has 4 sections, comprising sociodemographic information, 8 knowledge-level assessment questions, 6 attitude questions, and 6 practice questions. Patients' responses were evaluated, with >50% being deemed to have high knowledge and 50% having low knowledge. Only 426 of the 487 hypertensive patients who were questioned met the inclusion and exclusion criteria, while 61 individuals declined to participate in the study. There were 62.44% males and 37.55% females among them. The majority of responders (40.84%) had hypertension for five to nine years and are at risk of getting comorbid illnesses. Most of the patients were from medium socio-economic status and were illiterates. Overall knowledge and positive attitude scores in the current study were 68.89% and 71.20%, respectively, which are both very good results. But, only 30.23% of the participants reported engaging in frequent practice. As a result, we believe that a clinical pharmacist can play a significant role in enhancing patients' knowledge and adherence through patient education, diet and exercise development, and better patients' practising activities.

Keywords: *Hypertension, knowledge, positive attitude, practice, questionnaire*

PT/ST5/055

STUDY ON DEPRESSION AMONG STROKE SURVIVORS DURING COVID-19 PANDEMIC

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Abstract: Stroke is the second most prevalent cause of disability and death worldwide.40% of individuals who suffer from stroke experience depression, a typical neuro-psychiatric complication. Stroke patients frequently need the support of family caregivers, but during the COVID-19 outbreak, adequate care couldn't be offered to the patient, which would further worsen the condition of depression. Hence our study focuses on post-stroke depression (PSD), in patients who were hospitalized during the early phase of the COVID-19 pandemic, and also assesses the risk factors associated with stroke. It was a cross-sectional study with 218 stroke patients as the sample size and included patients who were 18 years and above. The data was collected by using a demographic-clinical data questionnaire and the PHQ-9, a self-administered 9-item questionnaire that is used to assess the severity of depression. In this study, the overall prevalence of stroke was higher among men when compared to women and most of the participants had either mild (27.62% Ischemic stroke and 27.27% Hemorrhagic stroke) or moderate (30.22% Ischemic stroke and 31.16% Hemorrhage stroke).Severe depression was observed in 7.09% of Ischemic stroke patients and 7.82% of Hemorrhagic stroke patients during the COVID-19 pandemic.

Keywords: *Post-stroke depression, hemorrhagic stroke, ischemic stroke.*

PT/ST5/056

ASSESSING OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANTIBIOTIC USAGE AMONG GENERAL PUBLIC

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Abstract: Total of 16,290 million doses of antibiotics were sold in India 2020, which is slightly less than previous years. Inappropriate usage of antibiotics is significant driver of antibiotic resistance. Around 90% of antibiotic consumption occurs in outpatient settings; therefore, it's imperative to administer only when necessary. Population knowledge, attitudes and practices (KAP) have been evaluated in previous studies to identify the certain condition and set of variables affecting them. In this study, objectives are to assess current KAP regarding antibiotic and antimicrobial resistance among the general public in which 1086 people took part in 6 months study through a web-based survey in 2022. Questionnaire containing 26 statements about resistance, side effects, antibiotic abuse and frequency of usage was used. The majority of 65.8% were female, within age group 18-28 years. The majority of 91% were knowing antibiotic usage, 73.9% of participants knew about antibiotic resistance and when it comes to practices, about 90.4% had good practices towards antibiotic usage. This study concluded that reinforcement of antibiotic-use policies involving pharmacies, drug supply, distribution, and sale is urgently needed. There is critical need for actions especially counselling that effectively builds understanding of how and when to take antibiotics, its utilization, especially targeting groups among whom the misconceptions seem to be most prevalent.

Keywords: *Antibiotics, KAP, Antimicrobial resistance.*

PT/ST5/057

LIFESTYLE FACTORS ASSOCIATED WITH EARLY MENARCHE INFEMALE STUDENTS

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Abstract: Early menarche was a reported onset of menarche before 11 years. Depending on studies, early menarche is defined from 9 to 11.5 years. Because of variations in lifestyle and eating habits, the typical age at menarche differs by area. The mean age at menarche reportedly varies from 16.5 years to 12.4 years in Indian women over the past 4 decades. Most of the studies reported age at menarche above 13 years during 1970-1990, while some studies provide below 13 years as the age at menarche after 2000. Hence, our study focused on female school students in and around Kumarapalayam to observe the prevalence and lifestyle factors associated with early menarche. In this cross-sectional study, 120 samples were collected. A questionnaire was used to gather information from students who attained menarche and between the age group 9 and 11 years. It was found that 93.75% of the participants were from urban areas and 66.7% of participants were from the nuclear family. The study found that less sleeping time (41.7%), less sports activity (85.4%), less physical activity (66.7%), high social media use (81.3%), less fresh fruits and fruit juice intake (75%), and pasteurized packet milk (37.50%) were the lifestyle factors associated with early menarche. The study demonstrates awareness of the risk factors for early menarche and its long-term effects should be developed.

Keywords: *Early Menarche, Lifestyle Factors, Educational Programs.*

PT/ST5/058

ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE OF PHARMACOVIGILANCE AND ADVERSE DRUG REACTION REPORTING AMONG NURSING STAFF

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Abstract: The Pharmacovigilance system depends heavily on the work of healthcare professionals. To identify, manage, and report medication safety issues early on, they need a great deal of knowledge and experience in the field. Additionally, healthcare workers need to be well-versed in the process and necessity of reporting adverse events. Thus, the aim of the study was to assess the knowledge, attitude, and practice of pharmacovigilance and adverse drug reaction reporting among nursing staff. To determine the factors that encourage the study subjects to report adverse drug reactions, as well as the factors that discourage the study subjects from reporting adverse drug reactions. In this Cross-sectional study, 300 participants were randomly approached for collecting the data. Totally 300 questionnaires were distributed among nursing staff who were working in different private multi-specialty hospitals in Chennai, 151 were filled and returned. There were 16 questions assessing knowledge regarding ADR, 29(18.8%) and 22 (10.9%) knew about the term pharmacovigilance and ADRs respectively, and 151(100%) don't know about the types of ADR.The attitude shown by the majority of participants towards ADR reporting was given a response of "strongly agree" to the questions. Thus, the study discloses that nursing staffs have poor knowledge and poor practice but a good attitude towards ADR reporting.

Keywords: *Pharmacovigilance, ADR reporting, Nursing staff*

PT/ST5/059

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE IN CHILDREN WITH EPILEPSY USING QUALITY OF LIFE IN CHILDHOOD EPILEPSY QUESTIONNAIRE(QOLCE-55)

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Abstract: Children with epilepsy are more likely to have a low health-related quality of life (QOL) because it is one of the most prevalent chronic neurologic disorders in children. Children with epilepsy struggle to function in a variety of areas, including emotional and behavioural issues, social skills, academic success, and family life. These consequences can last into adulthood. This study is conducted to explore the current status of QOL in epileptic children by using the QOLCE-55 questionnaire and studying the association between them. This is a prospective observational study with 113 participants, whose ages ranged from 4-15 years. Who were diagnosed with childhood epilepsy were selected to assess the QOL of the children, out of 113 participants, 58(51.32%) were male and 55(48.67%) were female. The overall mean cognitive functioning QOLCE-55 score was found to be 43.72. similarly, emotional, social, and physical functioning QOLCE-55 score was found to be 57.81, 55.67, and 75.65 respectively. The overall QOL score in the present study was 64.7 (generalized seizure) and 64.6 (partial seizure). Children with epilepsy were found to have compromised overall QOL, which was unaffected by the socioeconomic status of the family or the educational level of the parents. According to this study, the majority of patients have cognitive dysfunction and diminished social function.

Keywords: *Epilepsy, Children, Quality of life (QOL).*

PT/ST5/060

STUDY OF EFFECTIVENESS OF CLINICAL PHARMACIST COUNSELING ON COMPLIANCE AND LOW-DENSITY LIPOPROTEIN GOALS

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Abstract: Hyperlipidaemia has emerged as increasingly prevalent risk factor in the worldwide epidemics. This study was designed to assess the effectiveness of personalized telephone follow-up on rate of reduction in compliance and serum Low-Density Lipoprotein (LDL) level for patients receiving lipid-altering pharmacotherapy. The prospective interventional study was conducted in the out-patient department at Tertiary Care Hospital, Erode for a period of 6 months. Patient's age between 30-80 years of both genders, and had taking lipid altering medications was included in the study. Pregnant, lactating women and patient with psychiatric illness were excluded from the study. Framed questionnaire and the 8-item Morisky Medication Adherence Scale (MMAS) were filled at baseline, and for 3 months after baseline. Totally 64 patients were recruited. Of these, 43 were males and 21 were females. Management of dyslipidaemia by clinical pharmacist was associated with a significant reduction in overall mean Low-Density Lipoprotein (LDL, 63 mg/dl, $P<0.05$) compared to group that did not have a clinical pharmacist counselling of dyslipidaemia (LDL, 29 mg/dl, $P<0.05$). Changes in medication adherence MMAS mean scores of intervention group after 3 months telephonic counselling is increased (4.5, $P<0.03$). This implies that clinical pharmacist involvement in lipid management, including medication prescribing, leads to better clinical results, as measured by a greater reduction in LDL.

Keywords: *Hyperlipidaemia, Patient counselling, Clinical Pharmacist, Medication Adherence*

PT/ST5/061

KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS MENOPAUSE AND HORMONE REPLACEMENT THERAPY: A POPULATION BASED HOUSEHOLD SURVEY

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Abstract: Menopause is a physiological event marking the end of women's reproductive life due to ovarian failure. More attention to the health of perimenopausal and postmenopausal women is necessary in improving their quality of life and preventing degenerative diseases. To assess the level of knowledge, attitude and practice and to create awareness regarding menopause and Hormone Replacement Therapy (HRT) among women. The descriptive cross-sectional study was conducted in rural villages of Kumarapalayam town, Namakkal district. Total study subjects were found to be 346 women. Most of the pregnant women present in the age group between 41-45 years than other groups. Most of the women 200(58%) were found to have menopause than 146(42%), who have not yet attained menopause. Among 346 women, 146(42%) were identified as perimenopause, 117(34%) menopause and the least 83(24%) as post menopause period. Most of the study respondents were not familiar with knowledge questions towards hormone replacement therapy. It was found that moderate level of knowledge, attitude towards menopause and with low awareness level on long term complication. Poor level of knowledge, attitude and benefits/risk towards HRT were found among study subjects. The awareness programme should be done on menopause symptoms and HRT are thought to be essential in middle-aged women.

Keywords: *Menopause, Hormone replacement therapy*

PT/ST5/062

EVALUATE THE PSYCHOLOGICAL IMPACT OF STUDENTS THROUGHOUT THE COVID-19 PANDEMIC, AS WELL AS PSYCHOLOGICAL IMPROVEMENT FOLLOWING THERAPY

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Abstract: COVID-19 outbreak reported in Wuhan, Hubei Province, China in December 2019 resulted in economic, social, mainly psychological repercussions on life of students while they are away from normal schooling schedule. Many students at home/living space have undergone psychological, emotional distress and not engaging productively. This study aims to evaluate the psychological impact of students throughout COVID-19 and psychological improvement following therapy. Main objectives are to identify the financial, academic, personal, and relationship stress during COVID-19 among students, counselling them to overcome COVID-19 struggles and evaluate effectiveness of counselling. In this prospective observational study, conducted for 6 months in 2022, 485 students within age group 18-26 years were distributed with 20 items of pre-counselling and 12 of post-counselling questionnaire and their psychological impact scores were compared. The majority of 56% students were male and 35% within age group 21-23. Study results that 43% students felt positive after counselling, 57% able to manage their past and 54% able to manage their future struggles. Majority of students were affected psychologically, 57% especially due to relationship problems, 50% academic stress, 37% financial crisis, and 39% loneliness which lead to negative health outcomes, insomnia, depression, demotivation, and indecisive. Psychological counselling played a major role to overcome issues due to COVID-19 pandemic.

Key words: *COVID-19, Psychological impact, Counselling.*

PT/ST5/0063

STUDY ON ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE OF DIABETIC FOOT CARE IN PATIENTS WITH DIABETIC PATIENT

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Abstract: A diabetic foot ulcer is an infection, ulceration, or destruction of deep tissues connected to neurological disorders and varying degrees of peripheral vascular illnesses in the lower limb, according to the World Health Organization. The study aims to assess the knowledge, attitude, and practice of diabetic foot care in diabetic foot ulcer patients. The study's major goals are to identify the KAP for diabetic foot care in foot ulcer patients and to research ulcer grading in diabetic foot ulcer patients. A questionnaire was used to gather information from patients between the age group 20-90 yrs. In this prospective observational study, 259 samples were collected of which 56% were female. This study found that 83.78% of participants were not aware that patients with diabetes develop foot ulcers and gangrene. 72% were not aware of the loss of sensation on their feet, they were more prone to foot ulcers. From the study, only 30-40% had knowledge about diabetic foot ulcer disease. The present study shows that there prevails poor knowledge and practice of diabetic foot care among patients and the knowledge can be improved by education and proper foot care by health care providers.

Keywords: *Diabetes mellitus, KAP, Complications.*

PT/ST5/064

GENERAL POPULATION'S KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANTIBIOTIC USE IN UPPER RESPIRATORY TRACT INFECTIONS

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Abstract: Upper Respiratory Tract infections (URTI) are one of the most common conditions in the primary care setting for which antibiotic prescriptions have been reported to be high worldwide. About 50% of the antimicrobial are prescribed to people unnecessarily, the misuse or overuse of antimicrobial agent is considered to be a major force towards antimicrobial resistance. The aim of the study is to evaluate knowledge, attitudes, practices and beliefs about the use of antibiotics and antibiotic resistance in the treatment of URTI in the general population. The cross-sectional study was conducted at tertiary care hospitals in Erode among 375 participants. The antibiotic knowledge among the participant was insufficient. Most of the respondents (85%) reported that antibiotics are effective against viruses. 89% of patients believed that antibiotics could cure their respiratory tract infections faster. 19% of the patients normally keep antibiotics in stock at home for emergency use and 10% of the patient's antibiotics are given to family members, usually when they are sick. Incorrect knowledge and beliefs about antibiotics that cure URTI faster were highly prevalent, with the latter being strongly associated with wanting antibiotics. In addition, minimizing the non-prescription use of antibiotics and increasing public awareness about the health and economic hazards of antibiotic resistance is also required.

Keywords: *Antibiotic, Upper Respiratory Tract Infection*

PT/ST5/065

ASSESSMENT OF COMMUNITY PHARMACIST KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS MEDICATION SAFETY AMONG PREGNANT WOMEN

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Abstract: Pregnancy and child birth is a natural process, however in relatively high proportion of pregnancies end in complications. Drugs used during pregnancy can have temporary or permanent effects on the fetus. The number of women taking medications during pregnancy has been drastically raised from past 3-4 decades. The aim of the study is to assess and identify the community pharmacist's knowledge, attitude and practice towards medication safety during pregnancy. The prospective cross sectional study was conducted in Kumarapalayam town, Namakkal district among 260 participants. Majority of the participants have diploma qualification with less knowledge towards the safe use of medication during pregnancy. 54% of the respondents believed that over-the-counter medicines might be harmful during pregnancy. 33% of pharmacists having knowledge regarding teratogen and its effects and 54% of the pharmacists are unaware about USFDA pregnancy risk categories. 50% of the pharmacist's attitude was agree about an extra caution is required while dispensing drugs during pregnancy. 80% of the pharmacists advised pregnant women about prescription drugs that not to be taken during pregnancy period. Most of the community pharmacist has poor knowledge, positive attitude and poor practice about safe medication use in pregnant women. Several measures need to be taken to improve clinical pharmacist knowledge about safe medication use during pregnancy like free continuous educational programs.

Key Words: *Pharmacist, Pregnancy, Prescription*

PT/ST5/067

IMPACT OF MOBILE PHONE-BASED EPILEPSY EDUCATIONAL CAMPAIGN AMONG COLLEGE TEACHERS

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Abstract: Epilepsy is one of the most common neurological diseases and affects people of all ages, races, social classes, and locations. The teachers need to know about epilepsy and first-aid management to help the students in the classroom. Hence, the aim is to study the awareness of college-level teachers about epilepsy and to provide a mobile phone-based epilepsy educational campaign and analyze its impact. It was a cross-sectional study with 374 teachers as the sample size, and the study period was for 1 year. The study was conducted among non-medical college teachers who had mobile phones with the necessary ability to use them. The participants received short text/pictures, leaflets, presentations, and videos related to epilepsy and the management of seizures for 2 months. The data was collected by using a self-administered questionnaire that was designed based on similar studies and well-established approaches to knowledge, attitude, and practices conducted in many other countries. Before the intervention, only 20.05% knew about the epileptic attack in the classroom and after the intervention, it increased to 95.86%. In our study, it is concluded that this kind of educational program provides a cost-effective and accessible training intervention that can enhance teachers' knowledge about epilepsy and its co-morbidities and their preparedness to handle a seizure in the classroom.

Keywords: *Epilepsy, Mobile phones, Seizure.*

PT/ST5/068

ANALYSIS OF TRIGGERS, EXPRESSION, AND MANAGEMENT OF ANGER: CROSS-SECTIONAL SURVEY

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Abstract: Anger is an unpleasant emotion that is frequently accompanied by aggressive thoughts and physical arousal. It typically starts as a reaction to another person's undesirable behaviour that is perceived to be disrespectful, humiliating, threatening, or negligent. This study was conducted to analyze the various triggers, expression, and management of anger and the influence of gender on triggers, expression, and management of anger, In this prospective observational study, out of 568 responses received, the majority were from females (69%), followed by 31% of males and also found that 65% of the participants felt they were short-tempered. Therefore, anger and aggressive tendencies can heighten physiological arousal and cause a mental restlessness, compromising the onset and maintenance of sleep. Physical health is also impacted by rage. Gastrointestinal disorders are common when peoples are stressed and angry. Injustice, disrespect, violation, abusive language, body shaming, physical threats, insult, lying, and relationship disputes, are found to be common factors that trigger anger. A most common way of expressing anger was to use the facial expression. The correlation between age and anger management ability was analyzed using SPSS and a set of questions from the brief trait version of the anger management scale. And found that was no significant correlation between age and anger.

Keywords: *Anger, Triggers, Expression, Aggression*

PT/ST5/069

ANALYSIS OF PREVALENCE AND RISK ASSOCIATED WITH SUICIDE THOUGHTS AMONG COLLEGE STUDENTS

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Abstract: Suicide ideation and suicide attempts are more highly prevalent among medical students. Suicide is the second leading cause of mortality among college students and the third major cause of death among 15–24-year-olds. This study aimed to analyze the prevalence and risk factors of suicide ideation among medical and non-medical College students in Tamilnadu. An institution-based cross-sectional study was conducted from March - to September 2021 web-based survey data were collected. Data were analyzed by using Statistical Package for the Social Sciences version 26. Chi-square and Spearman rho correlation was applied to appropriate data at the significance of p< 0.05. Out of 476 respondents, 86 were found to have the risk of suicide, and 390 were found to be at no risk of suicide among medical and non-medical. The Suicide Behaviours Questionnaire-Revised (SBQ-R). Suicidal ideation was found to be associated with increased stress, decreased life satisfaction, and poor mental well-being in students' life, and these factors have a significant role in triggering suicidal ideation. Most of the participants were found to have academic-related stress. Suicidal ideation was found to be associated with increased stress, decreased life satisfaction, and poor mental well-being in students' life, and these factors have a significant role in triggering suicidal ideation.

Keywords: *Students suicide, medical and non-medical, stress, suicidal ideation, satisfaction with life.*

PT/ST5/070

IMPACT OF COVID-19 ON THE PSYCHOLOGICAL, PHYSICAL HEALTH AND ECONOMIC STATUS OF THE PEOPLE OF UTTARAKHAND

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Abstract-SARS-CoV-2 causing human 'coronavirus disease-2019' (COVID-19) a pandemic, results in emergency situations all over the world in short time. This health emergency holds many lives for their social, physical, psychological and economic growth. It is believed that personal hygiene such as handwashing, use of mask, sanitizer, social distancing and also lockdowns were useful to reduce risk for communication of SARS-CoV-2, which also challenge psychological, physical, social and economic needs of adults, older peoples, children and importantly pregnant women. The purpose is to survey the public opinion in Uttarakhand for impact of COVID-19 outburst. Our survey data has discovered that 61.54 % respondents accepted that lockdown was a good option to control communication of COVID- 19, but it can result in physical health issues (59 %), psychological issues (60 %), academic problems in children (58.24%). Most of the respondents (51%) were wearing mask, using sanitizer and gloves and some were using mask only (93.41 %), majority of respondents (87.91%) always cover their mouth when coughing and sneezing, most of them (63.74%) were sometimes wash their hands instantly after sneezing, coughing or rubbing nose. Some of the respondents (47.25 %) check daily details about COVID-19 spread. This survey data shows the need for development of new strategies to reduce adverse psychological, physical, social and economic impact.

Keywords- *COVID-19, SARS-COV-2, Pandemic, Uttarakhand, Psychology, Lockdown, Corona Virus*

PT/ST5/071

A STUDY ON QUALITY OF LIFE OF GENERAL AND PSYCHIATRIC WARD CAREGIVERS

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Abstract: Caregivers play a crucial role in the psycho-social management of mentally ill patients as it affects the Quality of life (QOL) of caregivers. This research compared caregivers in the general and psychiatric wards of patients in terms of their QOL. A comparative cross-sectional study was done by collecting 200 data from caregivers aged from 20-80 years in Erode Government Hospital in 2019 and evaluated using WHOQOL - BREF questionnaire. Caregivers of patients in the psychiatric ward comparably had lower scores in all domains than general ward caregivers, irrespective of the disease condition. The mean scores of Caregivers of general ward patients (31.76, 32.09, 31.38, and 32.18) had higher QOL than psychiatric ward caregivers with a p-value < 0.05. Significantly environmental, social, physiological, and physical health WHOQOL - BREF score were found to be 13.80, 13.57, 13.66, and 15.59 in psychiatric which may be related to the nature of the illnesses-chronic in the case of psychiatric and general. This study shows the need for attention to the caregivers of mentally ill patients to improve their QOL.

Keywords: *Caregivers, Quality of Life, Psychiatric ward, General ward.*

PT/ST5/072

A PROSPECTIVE STUDY ON THE EFFECT OF NIGHTMARES ON SLEEP

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Abstract: Dreaming is a subjective psychological state that is highly correlated with the occurrence of rapid eye movement sleep. Dreams do not typically negatively impact sleep, but nightmares can. To evaluate the dream anxiety level & sleep disturbance in nightmare sufferers using Van dream anxiety scale. A cross sectional observational study was conducted over a period of six months in Kerala & Tamil Nadu. A total of 425 participants responded to an online questionnaire which included both gender and aged above 18 years old. Van dream anxiety scale is used to evaluate the dream anxiety & sleep disturbance in nightmare sufferers. All statistical analysis was performed using IBM SPSS Statistics V22 software. There was a significant positive correlation between nightmare frequency and anxiety due to frightening dreams (r=.225). Disturbances in sleep and mood were directly correlated with nightmare frequency (r=.190). Dreaming is generally considered to be normal without any negative effects on sleep. Nightmares can become problematic if they occur frequently. In a study conducted by Ghorayeb&Napias (2021), half of the sample experienced their nightmares as at least somewhat distressing. The study reveals that frequent nightmares may impede a person's ability to fall asleep & cause sleepiness during the day. Moreover, frequent nightmares have an impact on anxiety & mood disturbances among study populations.

Keywords: *Dreaming, Nightmares, Anxiety, Sleep*

PT/ST5/073

TO ASSESS THE PREVALENCE AND QUALITY OF LIFE OF PCOS WOMEN IN SOUTH INDIA

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Abstract: In India women of reproductive age, PCOS accounts for 6% to 12% (up to 5 million cases), making it one of the most prevalent reasons of female infertility. The aim of the study is to assess the prevalence and quality of life of PCOS women in South India. The study included a total of 572 reproductive women; we used the Elizabeth Lee Viet questionnaire to assess their risk factors for PCOS. In which 178 participants had risk of getting PCOS. By assessing the risk factors associated with PCOS about 19.4% of South Indian population is prevalent to PCOS. When evaluating the risk factors associated with PCOS, people struggled to lose weight (P- 0.050 < 0.05) and ongoing weight gain (P- 0.008 < 0.05) and had premenstrual symptoms (P- 0.001 < 0.05) were found to be significant. Around 111 individuals were diagnosed with PCOS and found that the majority of them had a low quality of life. In South India it is expected to be with a low socio-economic status which eventually leading to the poor health related concern, in the study, the prime number of participants were overweight or obese, which can increase the risk of PCOS in the long run. In the study majority of the participants had poor QOL and the participants had less concerned about their health.

Keyword: *PCOD, Prevelance of pcos, Quality of life.*

PT/ST5/074

HEALTH ISSUES ASSOCIATED WITH INCREASED SMART PHONE USAGE DURING COVID-19 PANDEMIC WAVE 2.0 IN INDIA

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Abstract: In recent years, as smart phones have grown in popularity, problematic cell phone use has gotten more attention among students. Due to the quarantine period, loneliness, and online classes, students' use of smartphones rose during the COVID-19 epidemic, affecting their physical and psychological well-being. In this study, we have assessed the impact and effects caused due to over usage of smart phone among the students in India. Data were acquired using a semi-structured Google Forms questionnaire that included a consent form. The questionnaire link was distributed by email, WhatsApp, Facebook, and other social media platforms. Our results shows that students were experiencing health problems like headache (86%), vision problems (68%), sleep pattern disturbance (79%), lack of attention (66%). The average usage of smart phone usage among the students were found to be greater than 4 hours per day for 85% of the students. Smartphone usages were more prevalent in males (56%) than in females (44%).The online classes cause increased usage of smartphone and affects their health more and 83% of the participants felt that they were addicted to smartphone. Increased usage of the smartphone affects student's health and psychological well-being which could lead to low quality of life (QOL). Smartphone usages are becoming a necessity, even though students should be educated regarding proper usages and handling of smartphones and school/college should follow Government Guidelines for minimizing health hazards.

Keywords: *COVID-19, Smartphone, Health, Addiction.*

PT/ST5/075

STUDY ON PREVALENCE OF ANEMIA AND ITS IMPACT IN COGNITION IMPAIRMENT AND DEPRESSION LEVEL AMONG ADOLESCENCE

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Abstract: Adolescence is a time of shift from childhood to adulthood and is vulnerable in the human life cycle for the development of anemia. Cognitive function is affected by a drop in neurotransmitter levels brought on by reduced iron levels in the brain. This study aimed to identify the risk factors and the impact of anemia on cognition and depression levels among adolescence. The cross-sectional study was performed between the age group of 16-26 years. Using Sahli's method, the level of hemoglobin was analyzed, and participants were categorized as Normal, mild, moderate, and severe. About 458 participants provided information on their socioeconomic status, family history, menstruation status, and medical history in the questionnaire. The levels of depression and cognitive impairment were measured using the Patient Depression Questionnaire-9 (PDQ-9) and the Cognitive Assessment Questionnaire (CAQ) respectively. Females (59.9%) were found to be more anemic than males (40.1%). The majority (73.5%) of individuals fell into the moderate anemic group. Therefore 85% of participants exhibited cognitive impairment, and 79% had mild depression. According to the findings, anemia had a substantial influence on the levels of depression and cognition impairment in adolescents. Thus, by emphasizing the necessity to prevent complications in the future, anemia was brought to the public attention.

Keywords: *Anemia, Adolescence, cognition impairment, depression.*

PT/ST5/076

KNOWLEDGE, ATTITUDE AND PERCEPTIONS REGARDING INFERTILITY AMONG GENERAL PUBLIC

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Abstract: Infertility, defined as the failure to achieve pregnancy after one year of regular unprotected sex, is an issue of great concern with the number of affected couples rising every year. Thus it is imperative that people must have adequate knowledge about infertility. To assess the knowledge, attitude and perception regarding infertility among common people. We conducted a cross-sectional survey on awareness regarding infertility among the common public in Tamil Nadu, using an online survey questionnaire on infertility, with 3 sections, namely, knowledge, attitude, and perception. 749 responses were received, from which 583 were included in the analysis. Among 583 responses, the majority were from females (60.21%), and non-medical/paramedical educational background (51.46%). We observed that 64.84% of the participants had above average knowledge about infertility. However, respondents lacked adequate knowledge about the influence of moderate and intense exercise, menstrual cycle and usage of contraceptive pills on fertility. Majority of the respondents believed that infertility is 100% curable (43.22%) and that it is socially acceptable to have a test- tube baby (68.26%). However, further measures should be taken to give everyone, regardless of gender, a proper education regarding sex and reproductive health, from adolescence. There is a significant difference in knowledge, attitude and perception, among males and females and also among participants with medical/paramedical and other educational backgrounds. We took the initiative to spread awareness about infertility and certain ways to improve reproductive health, through video and pamphlets.

***Keyword**: Knowledge, Attitude, Perception, Infertility*

PT/ST5/077

VERIFYING THE NEED FOR PUBLIC AWARENESS ON KSD BY KAP AMONG YOUNG ADULTS: A SINGLE CENTRE STUDY

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Abstract: Globally, 12% of the world population is affected by kidney disease (KSD). Recurrent urolithiasis is becoming a serious concern in the medical world with its high rate of prevalence and limited medical interventions. The study evaluates the knowledge, attitude, and practice (KAP) about kidney disease (KSD) prevention among kidney stone formers in young adults and identifies their relationships with demographic characteristics. The six months cross-sectional study has determined the awareness of nephrolithiasis causes, symptoms, and management among students. The data was collected by administering a self-framed questionnaire to 110 participants. The majority of participants were male (66%) and 34% were female. The overall mean for the knowledge-wise domain was 57.61%. Most participants (54.4%) lacked confidence while answering most items in the Attitude domain which shows a lack of knowledge in the majority of patients. From practice domain, it was found that KSD is to be associated with lifestyle changes mainly in physical inactivity and dietary habits but it was found that the after-diagnosis patients had a moderate practice of lifestyle modification and treatment follow-up. This study shows that creating awareness among the public through the educational program can bring an improvement in the health condition of KSD patients in preventing recurrence and incidence.

Keywords: *KSD, Knowledge, Attitude, Practice.*

PT/ST5/078

PHARMACIST LED IMMUNIZATION CLINIC AND INCIDENCE OF VACCINE PREVENTABLE DISEASE: A NARRATIVE REVIEW.

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Abstract: Pharmacist-administered immunizations may prove to be the most significant catalyst in moving the profession of pharmacy from dispensing to direct patient care. Pharmacist involvement in immunization delivery has advanced significantly since 1994. Even then annually in the United States, more than 90.000 adults and 300 children die from vaccine-preventable diseases. This longstanding inability to adequately immunize has resulted in increased vaccination needs. Pharmacists contribute to this effort by administering immunizations and counselling patients about vaccines. This study primarily focused on evaluating pharmacist expertise in administering influenza vaccination. The secondary objective was to estimate the prevalence of vaccine-preventable diseases globally. This is a narrative review that involved a cross-sectional study of community pharmacists in a middle eastern country and a survey on global immunization including worldwide disease incidence. It was discovered that 72% of pharmacists were willing to offer influenza vaccine and had 99% general vaccination knowledge, 80.30% specialized vaccination knowledge on influenza, 96.6% awareness of precautions and contraindications, and 94.70% understanding of influenza vaccine adverse effects. Worldwide disease incidence of vaccine-preventable diseases was analyzed. Pharmacists are in a pivotal position to increase awareness about the importance of vaccinations and prevent vaccine-preventable deaths. But in India, the scenario is completely different. The pharmacist lead immunization is of the least concern. There is a lack of facilities and skilled professionals to carry out the same. This situation needs improvement. More and more opportunities should be made available for pharmacists in order to meet the patient demand and improve patient's quality of life.

Keywords: *Pharmacist, vaccination, immunization, diseases, prevention*

PT/ST5/079

IMPACT OF PHARMACIST INTERVENTIONS ON AWARENESS, MEDICATION ADHERENCE AND BELIEF ABOUT MEDICATIONS IN CAREGIVERS OF CHILDREN WITH EPILEPSY

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Abstract: Epilepsy is a common chronic medical condition of childhood. Within the first two decades of life, approximately 5% of children will have experienced some form of convulsions. Pharmacists perform an important role in the care of epileptic patients on their disease condition, proper use of medication and explaining the significance of compliance. The aim is to evaluate the effectiveness of pharmacist provided counselling in improving caregivers awareness on epilepsy, medication adherence and belief about medicines in caregivers of children with epilepsy. Objective of this study are to assess the awareness level, adherence level using MARS Scale, beliefs about medicine level using BMQ, provide educational information to the caregivers of children with epilepsy and then re-assess them. The sample size was 110 with 55 caregivers as control and intervention group each, were distributed with structured questionnaire on awareness of Epilepsy, adherence and belief about epileptic medications at baseline. Majority were males and within 6-10years age group. Overall belief and adherence on AED were measured, mean necessity score as 17.07±3.36, mean concern score as 15.56±4.76 and increased after counselling as 19.17±2.05 and 12.21±4.21. Study concludes that counselling provided by pharmacist has positive impact on caregiver's awareness, adherence and belief about drug therapy, reducing concerns perception and increasing necessity perception.

Key words: *Epilepsy, caregivers' awareness, Medication adherence.*

PT/ST5/080

PREVALENCE OF DEPRESSION AND ASSOCIATED RISK FACTORS AMONG THE ELDERLY

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Abstract: The global burden of the disease shows that depression will be the leading cause of disability in the developing world among the elderly. A cross-sectional descriptive study was conducted to explore the prevalence of depression and its risk factor in people aged 60yrs and above without any psychiatric morbidity. The study was conducted using a 15-item Geriatric Depression scale which helps in assessing depression. Out of 382 study population, 208 participants reported as depressive patients. Based on sociodemographic factors 54.45% were in the age group 71-80years, and 55.7% of female participants were found to be depressive. The burden of depression was high among illiterate people 73.5% than literate. Most of the depressive patient 67.7% comes from joint family. The study concludes that the prevalence of symptoms of depression was significantly higher among (54.45%) of elder people. To prevent geriatric depression, effective counselling and care for the old age population can promise a more fulfilled life for our old citizens.

Keywords: *Prevalence, Depression, Risk factor, Elder.*

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PT/ST5/081

A COMPARATIVE STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE OF HERNIA PATIENTS & GENERAL PUBLIC

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Abstract: A hernia is the abnormal exit or protrusion of tissues or an organ, through the wall of the cavity in which it normally resides. According to the National Center for Health Statistics 2015 report abdominal hernias is a common problem in the general population with a prevalence of 1.7% for all ages and for those aged over 45, it increased by 4%. The six-month community based cross sectional study (December 2019 to June 2020) has compared the Knowledge, Attitude and Practice (KAP) on hernia among general public and hernia patients via an online KAP survey. Identification of prevalence (33.8%) of hernia among participants was the secondary outcome. Out of 307 participants 203 (66.12%) belongs to non-hernia group. The age group of ≥ 58 years were mostly affected. 30.61% answered the sites of the occurrence of hernia are abdomen, groin regions and upper thigh. 60 (19.54%) hernia patients and 59 (19.21%) non-hernia subjects answered hernia causes no death, which indicate the lack of knowledge among the public about hernia severity. Irrespective of sex and age both group lacks a clear picture on hernia, but through education which can eventually turn down the recurrence, pain and other complications. The study concludes with a suggestion, early check-up for those who present symptoms of hernia since the risk increases with age, diabetes mellitus, obesity.

Keywords: *Hernia, Knowledge, Attitude, Practice.*

PT/ST5/082

PHARMACOTHERAPEUTIC EVALUATION OF SACUBITRIL WITH VALSARTAN IN HEART FAILURE PATIENTS

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Abstract: In patients with HFrEF, treated with sacubitril/valsartan, the treatment benefits were seen which reflects the LV reverse remodeling and predicts the prognosis. The purpose of this study was to analyze the pharmacotherapeutic evaluation of sacubitril/valsartan in HF patients. This prospective observational study is conducted in88 patients of age 18-75 years, prescribed with sacubitril/valsartan, in HF patients. The echo parameters such as ejection fraction, mitral regurgitation, diastolic dysfunction, and cardiac enzyme, NT-pro BNP, adverse events, NYHA Classification and KCCQ-12 score was obtained at baseline and follow up after 3 months. Now the data recorded were statistically analyzed using Statistical improvement was noticed in ejection fraction, mitral regurgitation and diastolic dysfunction, with a P-value of (<0.0001), (0.0080) and (0.0008) respectively, and NT- pro BNP levels was reduced with a P-value of (<0.0001). In this study, it was analyzed that 19% patients with NYHA Class I, showed an excellent improvement in KCCQ score. The impact of sacubitril/ valsartan on KCCQ score domains in our study, the total symptom frequency score, clinical summary score, and overall score were statistically improved over 3 months, with a P-value of (<0.0001). This study concludes, that sacubitril/valsartan and changes were observed in echo parameters, and KCCQ-12 score with respect to NYHA class, which minimizes the chances of rehospitalization due to cardiovascular complications, there by indicating improvement in the quality of life and overall health status of the patients.

Keywords: *Sacubitril, Heart failure, IV dysfunction, KCCQ Score, NYHA Class*

PT/ST5/085

ASSESSMENT OF RISK FACTORS AND THERAPY OF PULMONARY DISEASES IN ELDERLY

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Abstract: With increasing age having pulmonary diseases is not uncommon but in case of elderly, there are many risk factors which make treatment even more challenging for healthcare, such as physical changes associated with age, comorbidities, taking several medicines together due to presence of multiple illnesses. The objectives of this prospective, observational study were to identify the associated risk factors and to evaluate pharmacotherapeutic management of pulmonary diseases in elderly patients. It was conducted from July 2018 to July 2021 in the department of pulmonary medicine of a tertiary care teaching hospital in Bangalore, India. A total of 436 elderly patients aged >65 years, diagnosed with pulmonary diseases, who consented to take part in the study and fulfilled study criteria were enrolled. A well-designed and internally validated case report form was used to document the findings after due approval from the Institutional Ethics Committee. Demographic details, risk factors, comorbidities and prescribed medications were documented and analyzed. Out of the 436 elderly patients, 42.9% were male while 57.1% were female. The mean age of the participants was 70.02±5.25(SD) years. The major risk factors associated were occupational exposure (33.0%), smoking (26.1%) and biomass fuel exposure (16.5%). 44.7% of patients have prescribed 6-10 drugs, 43.8% received 11-15 drugs while 10.3% received >16 drugs. It was evident from this study that a thorough assessment of risk factors is required to provide a rational approach to the management of pulmonary diseases in elderly patients.

Keywords: *Pulmonary diseases, Risk factors, Elderly, Pharmacotherapeutic management.*

PT/ST5/086

A CROSS-SECTIONAL STUDY ON PUBLIC AWARENESS OF ALLOPATHIC DRUGS AND THEIR ADVERSE REACTIONS

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Abstract: The allopathy system of medicine treats disease using remedies that produce effects different from those caused by the disease itself. Most people in India are not aware of the usage and advisability of generic drugs and allopathy drugs. The aim of the study is to assess the knowledge and to spread awareness of allopathic drugs and their adverse drug reactions to branded and generic drugs among the public. The cross-sectional study was conducted through an online web survey over six months among 201 participants. From the results, we came to know that after taking allopathy medicine for their disease condition, 63% of participants were completely cured, and 24% of them improved from their illness. Around 70% of respondents were aware of the generic medicine, out of that 35% of the participants were not aware of the location of the generic store. From the total response, pharmacists play an important role in creating awareness among 21% of people than through social media and television. 76% of participants were aware of ADR. We concluded that while the population was aware of the generic drug, they were unclear about the locations and supply of generic medications in their immediate surroundings. Proper education about generic medicine may reduce their health and economic burden and enough counselling from the physician &pharmacist will reduce the incidence of ADR.

Keywords: *Allopathy, ADR, Branded and Generic drug*

PT/ST5/087

DEVELOPMENT OF PLANT BASED HAIR GEL TO OVERCOME ALOPECIA- A GLOBAL CONCERN FOR YOUTH

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Abstract: Alopecia areata, Telogen effluvium is the current major issue in younger population. Hair loss could be due to various underlying conditions or due to stress and environmental factors. The aim of the study is to make an evidence-based formulation that can manage alopecia without the occurrence of adverse effects. The study involves the screening of ligands obtained from plants and perform molecular docking and selection of the compounds which are effective against the disease targets causing the progression of alopecia. Based on the docking results plant derivatives were separated using HPLC and various solvent extraction methods. Using the extracted compounds, a gel formulation was made for topical use. The prepared gel was used in a group of patients and the periodic comparison was done between the test and control group. The compounds selected are thought to be acting by inhibiting various targets which can cause the progression of alopecia and baldness. The test group showed better hair growth and increased hair volume than compared to the control group.

Keywords: *Hair remedy, molecular docking, ligands, Alopecia areata, baldness, solvent extraction method.*

PT/ST5/088

COMPLEXETIES IN MULTI DRUG REGIMEN – A FAILURE TO MEDICATION ADHERENCE? IS THERE A NEED OF CLINICAL PHARMACIST

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Abstract: Failure to take prescribed medicines as directed poses serious risks to communities and contributes, along with patient morbidity and economic burden, to the elusive ability to eradicate disease worldwide. Non-Adherence is a multifactor rather than a single factor leading to treatment failure. Especially in geriatrics, factors such as forgetfulness, confusion, and inability to self-medicate are predictors of poor medication adherence (MA). These factors were evident in the general population, including indication ignorance, medication discomfort, and side effects from multiple medications. The goals of the current study were to improve patient understanding of the disease, identify risk factors for decreased MA, and improve medication adherence through patient education. To assess the reasons that contribute to MA decline, compare outcomes in patients who adhere to treatment regimens with those who do not, and to improve patient's MA. A prospective observational study was conducted over 6 months. A total of 61 patients were randomly selected, of whom three of were later excluded from the study. Of the 58 cases, 30 were male and 28 were female. DM 17 (29.31%), HTN 11 (18.97%), DM with HTN 7 (12.06%), asthma 4 (6.90%), and other disorders were significantly less common in subject history. Medication compliance improved significantly after being provided with personalized counselling and a specially designed patient information leaflet. According to this study, patient education provided by pharmacists had a significant impact on how patients took their medications, which improved their clinical outcomes.

Key words: *Medication Adherence, economic burden, Geriatrics, Patient Education.*

PT/ST5/092

A PHARMACOEPIDEMOLOGICAL STUDY OF HYPERTENSION AMONG WOMEN IN SELECTED AREAS OF CHITRADURGA TALUK

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Abstract: Hypertension ranks third, after underweight and unprotected sex, in the list of six major risk factors contributing to the global disease burden. Women working outside the home had a lower prevalence of hypertension than who stayed at home. It is an important risk factor for future development of CVDs. Despite of trends improving, several women are not aware of their condition, are not receiving therapy when needed, when receiving therapy are not achieving recommended BP goals. This represents a significant gap between recommended treatment goals and patients actually attaining those goals, is a clear opportunity for all health care providers to improve the outcomes of such population. To assess the prevalence; drug usage pattern among hypertensive women. This was an observational study. Self-designed and validated questionnaire was used to collect the demographic and other vital information. Participants were recruited randomly from selected localities of Chitra Durga city. *403 women were enrolled in the study, of which* 53 (13.15%) were already diagnosed with HTN at the time of study. The subjects with major symptoms were 182 and minor 162; out of which 53 were previously hypertensive; remaining 133 were informed to consult the physician for further diagnosis of which 83 have reported and 49 were hypertensive who were newly diagnosed. A total of 102 participants were having hypertension from 403 subjects. Our study revealed 1 in every 3 women was hypertensive. The study also revealed that few subjects were non adherent/not taking medications due to various reasons.

Key words: Hypertension, prevalence, Women, treatment, goals.

PT/ST5/095

EFFECT OF PREOPERATIVE CHEMOTHERAPY ON THE OUTCOME OF WOMEN WITH OPERABLE BREAST CANCER

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Abstract: Neo Adjuvant Chemotherapy (NAC) has expanded to include patients with early-stage, operable breast cancer because it is revealed that the achievement of a pathologic complete response (pCR) is associated with excellent long-term outcomes. This research aimed to study the effect of preoperative chemotherapy (NAC) on breast cancer. It was a prospective observational study and the duration of the study was six months. One forty-nine breast cancer patients were screened among them 87 patients were included as per the inclusion criteria. Based on the size of the tumour number of cycles of NAC (AC4 (Adriamycin & Cyclophosphamide) & T4(Paclitaxol)) was given. The baseline PET-CT and CBC and mammogram were done for the study population. After completion of the cycles, the size of the tumour was measured again. Meanwhile, the cost of the treatment was evaluated. The results indicated that out of 87 patients 51 patients had right side breast cancer and 36 had left side breast cancer. For those who had lump sizes of 2-5 cm to them, NAC was given. Nearly 58% of the patients were in stage 2, having the illness for 3-6 months with lymph node metastasis while undergoing preoperative chemotherapy. 65% of the population had the hormone receptor ER/PR +ve responsible for breast cancer. During NAC, most of the patients (89%) experienced alopecia. The treatment cost was higher in Regimen III ACT (4+4) at Rs.17925 for an individual. The study concluded that the tumour size of the patient after the neo-adjuvant chemotherapy was decreased due to the effective response of the drugs for 4 cycles.

Keywords: *Breast Cancer, Neo-adjuvant, Adriamycin, Paclitaxel, Cyclophosphamide, FNAC.*

PT/ST5/096

Monkeypox Outbreak 2022 - A Review

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Abstract: The human form of monkeypox was first identified in 1970. Monkeypox was confirmed in a person who had just arrived from Nigeria in the USA on May 6, 2022. The Orthopoxvirus genus, Poxviridae family, and Chrodopoxvirinae subfamily comprise the double-helix DNA virus known as the monkeypox virus. The monkeypox virus can be spread by contact with contaminated skin, bodily fluids, or respiratory droplets. The virus spreads by the exchange of nasopharyngeal and oral fluids, multiplies in local lymph nodes, and then travels through the bloodstream to infect skin epithelial cells and other tissues. Rash-causing vasodilation, hyperaemia, and inflammatory cell infiltration are brought on by viral multiplication and invasion of epidermal epithelial cells, which results in the dermis being superficially inflamed. Other symptoms include rashes, swollen lymph nodes, fever, headaches, and shivering. Monkeypox virus detection techniques include PCR, clinical evaluation, immunological techniques, and electron microscopy. The CDC confirmed that there is no proven cure for MPXV infection. It is possible to treat monkeypox using antiviral medications such tecovirimat, cidofovir, and brincidofovir. The CDC advises administering the Jynneos vaccine within 4 days of exposure, which aids in the disease's prevention, and within 2 weeks to lessen the severity of symptoms.

Keywords: *Monkeypox; poxvirus; diagnosis; treatment; vaccine.*

PT/ST5/097

PATTERN OF USE OF ANTIIOTICS IN A TERTIARY CARE HOSPITAL- FIRST PHASE OF ANTIMICROBIAL STEWARDSHIP PROGRAM

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Abstract: Antibiotic resistance is a worldwide issue, but it is primarily a local problem where bacterial isolates from various parts of the world have high levels of single and multiple drug resistance to the commonly used antibiotics. As a result, it is important to ensure responsible drug use in the local environment. The study aim at evaluating the prescribing trend of antibiotics. This hospital-based prospective observational study looked at the wards for internal medicine in a tertiary care facility patient who have systemic disease Infections were registered and monitored. The gathered information was examined and analysed. Out of 100 patients, 50% of patients were admitted with systemic infections including Bronchopneumonia (9%), viral pneumonia (6%), gastroenteritis (6%). Other indications for antibiotic use were found for conditions like multiple injuries, renal calculus and uretery calculus accounts for 50%. A total of 167 antibiotics were prescribed for inpatients, the most frequently prescribed injectable and oral antibiotics were ceftriaxone (35%) and amoxicillin (29%), respectively. Overall, more than half of patients (66%) had at least one oral and/or injectable antibiotic prescribed, whereas 44% were on treatment with antibiotic combination. Majority (55%) of patients were on antibiotics for a duration of 4-10 days while 45% were for 3 days. Overprescribing of broad spectrum antibiotics was found to be the major issue since culture and sensitivity test has not done in most of the cases. Establishing institutional guidelines for the use of antibiotics with the aid of culture and sensitivity tests might lessen the issues.

Keywords: *Antibiotics, Infections, Pneumonia*

PT/ST5/099

A REVIEW ON POTENCY OF SACUBITRIL/VALSARTAN IN HEART FAILURE PATIENTS WITH REDUCED EJECTION FRACTION

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Abstract: Heart failure (HF) is one of the leading global mortality threat that is caused due to the impaired cardiac ventricular filling (or) poor blood ejection by the heart muscles characterized by a major clinical symptom dyspnoea. The main pathology behind heart failure is over activation of Renin angiotensin system (RAAS) and Natriuretic Peptide system along with several other mechanism resulting in less blood ejection. The therapeutic management of heart failure has turned out to be a major health burden due to its escalating prevalence worldwide. Sacubitril/valsartan is the first angiotensin receptor blocker Neprilysin inhibitor (ARNI) approved by the United States food and drug administration (USFDA). The drug has been introduced into clinical practice for its ability to abate hospitalization, Re - hospitalization and mortality rate of chronic heart failure patients with reduced ejection fraction (HFrEF). Sacubitril/valsartan elicits its action synergistically with the RAAS system and natriuretic peptide system blockade thus inhibiting Neprilysin, preventing cardiac remodelling and supporting cardiac myocyte survival. This review highlights about the optimal implementation of the drug into clinical practice comparing with standard HFrEF therapeutic care. The review also focuses on discoveries, clinical evidence, scientific reasoning, safety and tolerability profile of the Sacubitril/valsartan with standard evidence compilation.

Keywords: *Heart failure, Ejection fraction, Neprilysin inhibitor, renin angiotensin system, natriuretic peptide, Sacubitril/valsartan*

PT/ST5/00104

EVALUATION OF PERSISTENT SYMPTOMSANDMEDICATION ADHERENCE AMONG COVID-19 AFFECTED PATIENTS TREATED UNDER HOME QUARANTINE

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Abstract: The Covid-19 pandemic represents the world's worst public health threat since the 1918 flu pandemic. Since the information is lacking on persistent symptoms after recovery, the study aims at persistent symptoms and medication adherence among patients treated under home quarantine. The study was conducted between July 2021-December 2021 in the Udupi district of South Karnataka. SARS COV2 infected patients who took treatment under a home quarantine setting were interviewed for demographics, vaccination status, symptoms during and after recovery and medication adherence. Out of 280patients, the mean age was 39.68. The majority were vaccinated with covishield (70.4%). A greater percentage of patients (91.4%) isolated themselves in the house and 0.7% causality was observed in the family. Fever(76.8%), cough(68.6%), tiredness(29.3%), body ache(28.6%), cold(25.7%), headache(19.3%), loss of taste and smell(18.6%), sore throat(17.1%), breathlessness(12.5%), chills(12.1%), diarrhoea(8.2%), skin rashes(2.5%), and conjunctivitis(2.1%) were experienced during the active phase of Covid-19 whereas fatigue(15.7%), body ache(13.2%), joint pain(10%), dry cough(10%), feeling pain while breathing(8.9%), chest pain/tightness(8.6%), difficulty breathing/nasal congestion(7.9%), reduced appetite(5.4%), dry eyes/mouth(4.6%), troubling physical symptoms(4.3%), increased heartbeat(3.9%), skin rashes(3.6%), loss of memory/concentration(2.1%) and runny nose(2.1%) were persisted even after the recovery. Persistent symptoms and reduced medication adherence are a result of poor management at the home quarantine. Superintended care is essential to counteract the progression of Long Covid-19.

Keywords: *Covid-19, Persistent symptoms, Post Covid, medication adherence, home quarantine*

PT/ST5/00105

ASSESSMENT OF KNOWLEDGE AND ATTITUDE OF NURSING STUDENTS TOWARDS CLINICAL PHARMACY SERVICES IN SOUTHERN INDIA

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Abstracts: Clinical pharmacy services are patient-centered services that aim to improve the rational use of medicines by maximizing therapeutic effect, minimizing risk and respecting patient preferences and decisions, ensuring the safe and cost-beneficial therapy of individual patients.[1] The aim of this study is to assess the knowledge and attitude of nursing students towards clinical pharmacy services in Southern India. It is a cross sectional study conducted in a selected nursing colleges in Southern India. Self-administered questionnaire were used to collect information on knowledge and attitude of nursing students towards clinical pharmacy services. After the data was manually checked for completeness and consistencies, it was entered and analyzed by MS Excel. Descriptive statistics was used to present the data.[1] Out of the 110 nursing students involved in the study, 92(83.6%) of them were heard about clinical pharmacist but 102(92.7%) of them think that clinical pharmacist are integral part of medical team after the awareness. 85(77.2%%) of them knew that clinical pharmacist will make the selection of therapy easier, 89(80.9%) of them think that clinical pharmacy services is desirable in health care system after providing awareness. 42(38.1%) and 28(25.4%) of them were never and daily interacted with clinical pharmacist in hospital respectively, but after awareness 60(54.5%) of them think that clinical pharmacist can attend the ward rounds daily. Majority of them were having adequate knowledge and positive attitude towards clinical pharmacy services and its implementation in the hospital. Most of them think that implementation of clinical pharmacy services is desirable in healthcare system.

Keywords: *Clinical pharmacy services, knowledge, attitude, nursing students, clinical pharmacist*

PT/ST5/00106

STUDY ON PRESCRIBING PATTERN IN URETERIC CALCULUS AT A TERTIARY CARE CENTER, ERODE, TAMIL NADU

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Abstract: Urolithiasis is one of the most common medical conditions of genito-urinary tract which affecting almost 5-15% of the world population and nearly 12 % in India. Nearly 50% of affected patients will have recurrence within 5 years, making it a lifetime disease. Since it is a recurrent condition, the treatment options are not satisfactory for the cure or prevention of ureteric calculus. The present study is mainly evaluating the prescribing pattern of ureteric calculus in a tertiary care centre. A retrospective observational study was conducted with 105 prescriptions in in-patient department of the urology in a tertiary care centre. The data collected were analysed by MS Excel sheet & descriptive analysis. It was found that, 72.38% of patients were undergone surgery whereas 21.61% were treated with only drugs. Febuxostat and Hydrochlorothiazide were found to be the mainstay treatment options for the non-surgery patients. Acetaminophen + Diclofenac (375mg) was the most commonly used analgesic (65.71%) in all types of patients. Inj.Amikacin (1g) was the highly prescribed (24.04%) antibiotic during hospitalization and it switched over to T. Trimethoprim+ Sulfamethoxazole (960mg) (26.33%) during discharge. Out of 28 prescribed medicines, 17 were prescribed as per NLEM 2021. The study concluded that, the patients were treated rationally, but there should be a proper intervention on the drugs which are not in the list of NLEM for their use. The use of parenteral antibiotics was high, so kknowledge among the physicians should be improved by following the updated guidelines and continuous education on urology cases.

Keywords: *Urolithiasis, Ureteric calculus, Parentral antibiotics*

PT/ST5/00107

ONSET OF SYSTEMIC LUPUS ERYTHEMATOSUS FOLLOWED BY COVID 19 INFECTION - A FIRST CASE REPORT FROM INDIA

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Abstract: We present a case report of 49-year-old female of Indian origin diagnosed with SLE followed by COVID 19 infection. After 58 days Post COVID 19 infection the patient presented with symptoms of generalized body pain, arthralgia, Anemia for the past 2 weeks and was taking methylprednisolone 200mg. Her lab investigations show huge abnormality in Hb levels, Haemolyticanaemia was confirmed with peripheral smear analysis. Anti-Nuclear Antibody (ANA), Anti double stranded Deoxyribo Nucleic Acid (Anti ds DNA) positive confirms SLE in this patient, the patient was treated with Injection (Inj) Rituximab 500mg Intravenously (IV) for 4 weeks, paracetamol 650mg, Inj Avil 1amp, Inj Hydrocortisone ampoule IV. Condition seems to be improved in patient. During her 2nd review 2nd dose of Rituximab 500mg was administered, after 3months of follow up patient reported with Protein loss and currently treated with Telmisartan 40mg. This is the first case study to be reported from India. Regular monitoring and prior immunological and clinical follow up are needed for post-COVID 19 patients. The goal of this case study is to make aware the health care professionals regarding the condition of SLE followed by COVID 19 Infection.

Keywords: *COVID 19, Systemic Lupus Erythematosus, Anaemia, Anti-Nuclear Antibody, Rituximab.*

PT/ST5/00108

DIABETES-RELATED FOOT ULCER: CURRENT CONCEPTS

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Abstract: Foot ulcers have become a severe consequence of diabetes mellitus associated with negative outcomes and significant expenditures with a substantial influence on the quality of life. This type of ulcer is typically found in parts of the foot that are subjected to repeated trauma as well as pressure symptoms. The aetiology of diabetic foot ulcers is the crucial triad of peripheral sensory neuropathy, trauma, and deformity. Common causes include inadequate glucose control, peripheral vascular disease, and neglect of the foot. Ischemic ulceration, callus development, and edema are additional causes of ulceration. Foot ulcers have other effects too, like causing depression and lowering Quality of life. A study was conducted among people with diabetes, which concluded peripheral vascular disease (PVD) is the leading cause of limb loss and amputation. It is estimated that on an average 7% of the world population are diabetics now and this number is estimated to increase to 8.3% by 2030. Diabetic individuals frequently experience complete obstruction of the femoral, popliteal, and tibial arteries due to PVD. It is treatable with either open surgery or endovascular techniques. Neuropathy, ischemia, and infection cause toenail ulcers. The amputation rate of toes might be reduced by 50% if the neuropathic ulcer is treated early. Many foot ulcer disorders can be avoided with intense therapies, glucose monitoring, high-tech dressings, and team care. New treatments, such as topically applied growth factors, skin substitutes, and larval therapy, may aid those for whom ulcer prevention has failed. The use of recombinant human platelet-derived growth factors (Becaplermin) in the encouragement of healing of neuropathic foot ulcers is supported by a number of controlled trials. Similarly, the recent development of living human skin mimics like Dermagraft and Graftskin has created new prospects for speeding wound healing in neuropathic ulcers. The use of larvae (maggots) to clean mostly neuroischaemic lesions has also recently attracted renewed interest. All of these advancements must be considered as supplements to, not a substitute for, appropriate wound care principles, which include effective off-loading and management of infection and peripheral ischaemia.

Keywords: *diabetes mellitus, Quality of life, neuropathy, amputation, treatment strategies*

PT/ST5/00109

PREVALENCE, AWARENESS AND ASSOCIATED RISK FACTORS OF HYPERTENSION – A COMMUNITY BASED SURVEY

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Abstract: Hypertension is a chronic condition and major risk factor for cardiovascular complications and other illness. Since it posing a public health challenge in socio-economic and epidemiological transition among rural community, it requires extensive research on prevalence of hypertension. The limited number of studies on prevalence of hypertension in rural population, India explains the need of the present study, as it mainly aims on estimation of prevalence, awareness and associated risk factors of hypertension in Jambai, Erode district, Tamil Nadu. A pilot study was conducted across Jambai as a part of two-month blood pressure measurement camp by Pharm D students. Door to door survey was carried out with a structured questionnaire among individuals of age >30 years. A total of 116 subjects were participated in the study. Blood pressure was measured twice in each subject and the mean value of the two measurements was taken. Hypertension was diagnosed by JNC-VIII criteria. Overall prevalence of hypertension was found to be 67.24%, in which 57.69 % were males and 42.30% were females. Individuals in the age group of 46-59 years were greatly affected with hypertension. 48% of subjects were aware about their condition and 35% were on antihypertensive treatment. The major risk factors identified were alcoholism (52.56%), tobacco use (47.43%), and obesity (39.74%). The study concluded with a high prevalence of prehypertension and hypertension which correlated with socio- demographic and behavioural risk factors among the studied population. Interventions aiming at increasing public awareness about such risk factors are essential.

Key words: *Hypertension, Blood Pressure, Risk factors*

PT/ST5/00111

RISK OF BLEEDING IN ATRIAL FIBRILLATION PATIENTS TAKING ANTICOAGULANTS

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Abstract: A prospective observational study performed to find liaison between mean arterial pressure (MAP) and GFR in patients with kidney disease and to describe the gender – specific prevalence. To find relationship between MAP and GFR in patients with HTN and CKD. Check the prevalence of MAP in males and females. Comparison between Hemodialysis and Non-dialysis patients correlating MAP and GFR. Low Mean arterial pressure can cause low renal blood flow and may cause damage to the kidneys. However, it is not clear in the general population whether or not low renal function is related to MAP. The present study examined the liaison between MAP and Glomerular filtration rate in patients undergoing hemodialysis treatment and in patients undergoing non-dialysis treatment aged above 18 years. A prospective observational study was performed on patients with chronic kidney disease (CKD) at Aster Prime hospital for duration of 6 months. 90 patients with chronic kidney disease were evaluated. The source of data collection was through case sheets and lab reports. Before Dialysis Correlation between MAP1 and GFR in haemodialysis patients was performed and the results demonstrated that MAP1 and GFR are significantly negatively correlated (r = -0.624) and sig.(2tailed) p value is less than 0.05 that is it is statistically significant. After Dialysis Correlation between MAP2 and GFR in haemodialysis patients was performed and the results demonstrated that the MAP2 and GFR are significantly negatively correlated (r = -0.394) and sig.(2 tailed) p value is less than 0.05 that is it is statistically significant. Non- Dialysis Correlation between MAP and GFR was performed and the results demonstrated that the MAP and GFR with correlation value (r = -0.074) and sig. (2 tailed) p value is more than 0.05 that is it is statistically not significant. Mean arterial pressure was associated with decreased GFR in patients undergoing haemodialysis. Whereas the MAP was not associated with decrease in GFR in patients undergoing non- dialysis treatment.

Keywords: Chronic Kidney disease (CKD), Mean arterial pressure (MAP), glomerular filtration rate (GFR), liaison, hemodialysis, non- dialysis.

PT/ST5/00112

KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) OF INSULIN THERAPY IN TYPE 2 DIABETIC PATIENTS

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Abstract: Insulin therapy has become a prerequisite in most of the type 2 diabetic patients after a certain stage of the disease has been attained. Unfortunately, there are several misconceptions regarding insulin therapy which eventually leads to poor disease prognosis. The aim of this study was to assess the patient's knowledge, attitude and practice of insulin therapy, to educate the patient on various aspects of insulin therapy and to evaluate the outcome of patient counselling on insulin therapy. A prospective study was performed on 85 type 2 diabetic patients who were on insulin therapy. A customized KAP questionnaire consisting of 35 questions on various aspects of insulin therapy was prepared. The patients' responses before counselling were recorded. They were then counselled according to their responses and a follow up was conducted after a specific period of time to evaluate the improvement. It was observed that a statistically significant difference was found in the positive and negative responses of the patients before and after counselling. The significant 'p' values were calculated using the dependent 't' test. A 'p' value of <0.05 was considered to be statistically significant at a confidence interval of 95%. On the other hand the 'p' values in case of neutral responses before and after counselling didn't show any significance. Through this study it can be implied that patient counselling plays a vital role in improving the knowledge, attitude and practice of insulin therapy leading to effective disease management and better quality of life.

Key-words: *Insulin, Knowledge, Attitude, Practice, Patient counselling.*

PT/ST5/00113

BIOEQUIVALENCE STUDY OF ZOLMITRIPTAN 5 mg TABLET IN HEALTHY, ADULT, HUMAN SUBJECTS UNDER FED CONDITION

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Abstract: Bioequivalence (BE) studies are in vivo (in human) methods designed to compare the bioavailability (amount absorbed into the body blood circulation) of a medicinal product to an innovator or appropriate reference product when studied under similar experimental conditions. The principle underlying this concept is important, namely that a generic medicine that results in essentially equivalent (compared with the innovator) blood-level profiles over time should elicit equivalent efficacy and safety. The project is a bioequivalence study conducted on Zolmitriptan 5 mg tablet. which is used for the treatment of migraine. The present study was open label, balanced, analyst blind, randomized, two-treatment, two-period, two sequence, single dose, crossover bioequivalence study on 12 healthy, adult, human subjects under fed condition. There were two treatments 1 test and 1 reference. There were two periods, period I and period II. Two sequences as AB and BA were used for assigning the treatment to each subject. 12 subjects who completed their clinical and bio-analytical phases of the study successfully. The curves obtained by plotting the mean plasma concentration of Zolmitriptan (ng/ml) on y-axis and the time in (hours) on the x-axis, and for log transformed mean plasma concentration of the Zolmitriptan (ng/ml) on the y-axis and the time in (hours) on the x- axis. The R in blue colour represents the 'reference drug 'and 'T' in black color represents the 'Test drug'. A single dose of test formulation of Zolmitriptan 5mg tablet were bioequivalent to the reference formulation Zomig 5 mg tablet as the 90% confidence interval for C max, AUC 0-t and AUC 0-∞ for Zolmitriptan were within the usual acceptable limit 80-125%. Both the formulation is well tolerated when following a single dose administration of the investigational product. No serious clinical adverse event causing disability, drop outs or death of the subjects were encountered, in summary the test formulation is bioequivalent to the reference in terms of the both the rate and extent of absorption.

Key Words: *Bioequivalence, Zolmitriptan, Formulation, Plasma concentration.*

PT/ST5/00114

EVALUATION OF ANTIDIABETIC AND ANTIOXIDANT ACTIVITY OF PSIDIUM CATTLEYANUM

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Abstract: Diabetes is a serious complex condition which can affect the entire body. Diabetes requires daily self-care and if complications develop, diabetes can have a significant impact on quality of life and can reduce life expectancy. It is estimated that in 2010 there are globally 285 million people (approximately 6.4% of the adult population) suffering from diabetes. This number is estimated to increase to 430 million in the absence of better control or cure. Hence the real prevalence of global diabetes must be astronomically high. To evaluate the antidiabetic activity of *Psidium cattleyanum* fruits. The fruits were dried and pulverised, extract with ethanol and Phytochemical analysis performed. Blood samples are collected as per the protocol and glucose level check by glucometer. which indicated aqueous ethanolic extract of *Psidium cattleyanum* treated animals 200 & 400, significantly decreased in blood glucose level (0.84± 1093↓ & 18.83±3.879↓) (P<0.05) *, (P<0.001) **& (P<0.0001) *** when compared to control and positive control. The ethanolic leaves extract of *Psidium cattleyanum* treated groups 200 & 400 mg/kg were dose dependent manner decreased (P<0.001) **& (P<0.0001) *** (10±0.362↓& 90±1.67↓) when compared with control group but positive control has more anti-diabetic activity at 7th day. The ethanolic extract of *Psidium cattleyanum*leaf (200mg/kg p.o and 400 mg/kg p.o) treated diabetic groups showed statistically significant decrease in blood glucose similar to the standard drug Glibenclamide (2mg/kg), which indicated block the alfa amylase activity and antagonize the alloxan action.

Key Words: *Diabetes, Psidium cattleyanum, Glibenclamide, ethanolic extract.*

PT/ST5/00115

PUBLIC KNOWLEDGE AND PERCEPTION TOWARDS THE ROLE OF PHARMACISTS IN HEALTH CARE SYSTEM: A QUANTITATIVE SURVEY STUDY

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Abstract: Pharmacists comprise the third largest healthcare professionals in the world and pharmacy profession has been evolving steadily over the last decade in India. Around the globe, all pharmacists working in different fields of the profession are directly or indirectly related to nation's health. Finally, pharmacists are responsible for insuring that "Right drug to right patient at right time in right dose through right route in right way." So that pharmacists is an integral part of health care system. To assess the public knowledge and perception towards the role of pharmacists in healthcare system. A Quantitative survey study was conducted with 1000 population for the period of 6 months. A direct survey was conducted among general public by implementing questionnaires. Among 1000 subjects, 610 responders were agreed and 240 responders strongly agreed that the pharmacists have important role in health care system. Whereas 63 responders were strongly disagreed and 42 were disagreed. Remaining 45 responders don't know whether the pharmacists are integral part of health care system like physician and nurses. From the collected data we draw the conclusion that public had a positive or good perception and knowledge regarding the roles of pharmacists in the healthcare system. Furthermore, establishing the professional roles of Pharmacist will also result in overall acceptance of the general image of pharmacists in the healthcare system and the society.

Key Words: *Pharmacist, Health care system, Health care team, Pharmaceutical Care,*

PT/ST5/00117

PROMINENCE OF MEDICATION THERAPY MANAGEMENT (MTM) AND IT'S BARRIERS

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Abstract: Medication Therapy Management (MTM) is the service given by pharmacist and Doctors of Pharmacy by reviewing patient's medications to ensure the person is on right drug, at right dose and right time. The service is to be provided in a systematic manner by assessing drugs prescribed with respect to disease, overall health and lifestyle. To acknowledge the importance and challenges of Medication Therapy Management to achieve best outcomes from the medication therapy. Primarily, Qualitative research (personal interviews of Doctors of Pharmacy) and then Systematic review of articles and publications associated with Medication Therapy Management (MTM) was done. Pharmacists and Doctors of Pharmacy play valuable role to perform MTM services by identifying and solving drug related problems and in improving clinical outcomes and cost saving effect. Efforts are needed by the pharmacists and Doctors of Pharmacy to develop MTM. This service includes advantages and barriers. Medication Therapy Management (MTM) has a cardinal role in optimizing the therapeutic outcomes of the drugs and prevent misuse of drugs, cost related adverse effects. Regardless of various benefits there are provisional barriers to be faced by the pharmacists and Doctors of Pharmacy, they consider providing MTM service professionally gratifying as they have adequate knowledge as well as access to information required for the service.

Keywords: *Medication Therapy Management, qualitative research, systematic review, barriers*

PT/ST5/00118

ROLES AND RESPONSIBILITIES OF PHARMACISTS IN PROVIDING HEALTH CARE AND EDUCATION

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ABSTRACT: Pharmacists play cardinal role in providing healthcare as well as providing education regarding the drugs and also the disease to the patients as well as to the community. Pharmacists job is not just to dispense medicines but also create awareness regarding the on-going diseases, their prevention. They also take part in managing the medication therapy to achieve appropriate roles. To appreciate and acknowledge the efforts of the pharmacists and also to enlighten the obligatory responsibilities of the pharmacists. Firstly, personal interview of community and clinical pharmacists was done. Secondly, systematic review of certain relatable articles is done. Pharmacists have been in an important role of dispensing medicines but other than this they have to look after the other responsibilities in providing education as well as providing health care services. Pharmacists are of great value in providing health care services and education. But this is not completely achieved since all the pharmacists are not qualified but rather just are working in pharmacies based on the experience as job. Clinical pharmacists take part in Medication therapy management. Pharmacists have to be genuine to their roles and responsibilities in order to provide best of their duties.

Keywords: *Pharmacists, healthcare, dispensing, genuine*

PT/ST5/00119

EFFECT OF PREOPERATIVE CHEMOTHERAPY ON THE OUTCOME OF WOMEN WITH OPERABLE BREAST CANCER

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Abstract: Neo Adjuvant Chemotherapy (NAC) has expanded to include patients with early-stage, operable breast cancer because it is revealed that the achievement of a pathologic complete response (pCR) is associated with excellent long-term outcomes. This research aimed to study the effect of preoperative chemotherapy (NAC) on breast cancer. It was a prospective observational study and the duration of the study was six months. One forty-nine breast cancer patients were screened among them 87 patients were included as per the inclusion criteria. Based on the size of the tumour number of cycles of NAC (AC4 (Adriamycin & Cyclophosphamide) & T4(Paclitaxol)) was given. The baseline PET-CT and CBC and mammogram were done for the study population. After completion of the cycles, the size of the tumour was measured again. Meanwhile, the cost of the treatment was evaluated. The results indicated that out of 87 patients 51 patients had right side breast cancer and 36 had left side breast cancer. For those who had lump sizes of 2-5 cm to them, NAC was given. Nearly 58% of the patients were in stage 2, having the illness for 3-6 months with lymph node metastasis while undergoing preoperative chemotherapy. 65% of the population had the hormone receptor ER/PR +ve responsible for breast cancer. During NAC, most of the patients (89%) experienced alopecia. The treatment cost was higher in Regimen III ACT (4+4) at Rs.17925 for an individual. The study concluded that the tumour size of the patient after the neo-adjuvant chemotherapy was decreased due to the effective response of the drugs for 4 cycles.

Keywords: *Breast Cancer, Neo-adjuvant, Adriamycin, Paclitaxel, Cyclophosphamide, FNAC.*

PT/ST5/00120

EVALUATION OF KNOWLEDGE, ATTITUDE AND PRACTICE OF COMMUNITY PHARMACISTS IN ORAL CONTRACEPTIVES, COUNSELLING AND DISPENSING IN TEHRAN, IRAN

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Abstract: Unwanted pregnancy leads to economical and health burden on females and societies. To avoid this, different methods of contraception such as oral pills have been developed. This study aimed to evaluate knowledge, attitude and practice of community pharmacists in dispensing and counselling toward oral contraceptives. The study was online cross sectional, conducted over Tehran province in Iran. Registered pharmacists by Pharm-D, B-Pharm and M-Pharm were included. Study conducted through questionnaire which distributed by online over community pharmacists. Period of study was 6 months. By use of Rao Software sample was found to be 71 (confidence interval 90% and margin error of 10%). Chi Square test, Fisher Exact test and Correlation-Regression were used for analysis of data. A total of 71 community pharmacy practitioners participated in the study. Majority of the respondents were of the age grouping between20 to 30(66.7%). 68.1% were female, and most of them had a Doctor of Pharmacy (Pharm-D) degree. The highest number of respondents had a work experience of fewer than 5 years (66.7%). By analysing of data, it was found 50.7% of respondents had poor knowledge and 49.2% had good knowledge. It was found 46% of male and 51% of female respondents had good knowledge. Majority of the respondents had a positive attitude towards oral contraceptive pills (100%). No association between demographic information-knowledge, demographic information-practice, and knowledge-practice level by applying Chi square test were found. By analysis through Microsoft Excel, r or correlation coefficient between knowledge and practice was found to be -0.0202. It was observed there is a mild reverse (negative) relation between knowledge and practice. Poor knowledge, good attitude and good practice of community pharmacists regarding dispensing and counselling of oral contraceptive pills were observed.

Keywords: *Oral contraceptive, Community pharmacy, Pharm-D, Tehran, Pregnancy*

PT/ST5/00121

A PROSPECTIVE STUDY ON PRESCRIPTION PATTERN OF ANTI-ACIDITY MEDICATIONS IN PATIENTS WITH CARDIAC DISEASES IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA.

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Abstract: The purpose is to study the prescription pattern of anti-acidity medications in patients with cardiac diseases and prescription pattern of anti-acidity medications in patients with coronary artery disease as reported from the outpatient section of cardiology department and incidence of patients using it. To identify the number of patients who are benefiting as well as not benefiting from anti-acidity medications. To analyse the side-effect profile after prescribing anti-acidity medications. Prospective cross sectional study research design was used. The sample constituted 275 patients categorized as those using Proton Pump Inhibitor, H2-antagonist and antacids. Baseline data was obtained by identifying the relevance of these medications. Follow up was conducted after 3 months to identify the adherence and effectiveness of drug. Population benefited from anti-acidity medications were identified. Patients with gastric disease even after 3 months were sent for gastroenterology reference. The protocol of the study was at first approved by the IEC. Among 275 patients, 218 used gastric medications and 56 didn't. Only 66.9 % of the patients continued to use medications after 3 months. A significant decline was also seen in the gastric symptoms exhibited by the patients.

Keywords: *Proton Pump Inhibitor, Anti acidity medication, Gastric symptom.*

PT/ST5/00122

AFTER EFFECTS OF EXCESSIVE ALCOHOL AND SMOKING AND BOTH WITH THE IMPACT OF PATIENT COUNSELING

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Abstract: Alcoholism and smoking are causing high threats in the society in the healthcare system. To analyze the extend of alcoholism and smoking in a particular population around Tamil Nadu and to view the impact of counselling for such people, this study was performed with the aim of giving awareness to the society and to show the importance to implement a system of deaddiction practice in the local populations. The study was carried out in a population around Komarapalayam, Tamil Nadu, India. A separate Data collection form was used to enter the details. A total of 60 cases were observed out of which 43.33% where only alcoholic, 8.33% where only smokers and 48.33% where consuming both. Nearly 80% of participants were in age group of 20-60 years. About 28.33% of participants had history of ulcer (11.66%), cardiovascular diseases (8.33%) and Diabetes mellitus (8.33%). The participants were then subjected to patient counselling regarding the consequences of alcoholism and smoking. This Short-term counselling demonstrated some effects on people who have just started the habits. Long-time habitual population were advised to undergo de-addiction in the nearby available de-addiction centre for which proper communication was facilitated. As we found that, more than half of the participants (56.66%) were alcoholic and smokers and which are the major known risk factors for the occurrence of lifestyle diseases, future research can be carried out for a preparation of an adequate action plan to reduce the consequences of alcoholism and smoking.

Keywords: *Alcoholic, Smoking, Prevalence, Counselling*

PT/ST5/00124

THE EFFECT OF SEVELAMER IN HEMODIALYSIS PATIENT WITH END STAGE RENAL DISEASE AND HOW IT AFFECTS CARDIOVASCULAR MORTALITY

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Abstract: Patients affected by end-stage renal disease (ESRD) demonstrate a very high cardiovascular risk mediated by traditional cardiovascular risk factors as well as abnormal mineral metabolism and a state of chronic inflammation. Sevelamer is a nonabsorbable non–calcium-based hydrogel with potential anti-atherosclerotic properties. The aim of our present study was to determine the impact of sevelamer on cardiovascular mortality in patients undergoing hemodialysis. This was a cross-sectional study including 30 patients selected on the basis of inclusion and exclusion criteria who were admitted to the hemodialysis department of a tertiary hospital in South India from March to August. 2022. Patients Serum creatinine, Uric Acid, Phosphate, Low density lipoprotein and Carotid Doppler Findings were measured at the interval of 1,3,6 months before and after taking sevelamer. The result based on baseline characteristic serum phosphate values ranging from 5.71mg/dl to 3.45mg/dl, LDL values ranging from 150.96mg/dl to 128.47mg/dl, and Carotid Doppler Findings ranging from 2.5mm (II) to 0.9mm(I). The study can be concluded that use of sevelamer as a calcium-free phosphate binder is associated with slow progression of vascular calcification, improved survival with prolonged cardiovascular mortality, and decreased phosphate levels serum in hemodialysis patients.

Keywords: *Cross sectional study, Sevelamer, Hemodialysis patient, Low density Lipoprotein.*

PT/ST5/00127

A PROSPECTIVE STUDY OF SEPSIS DUE TO UNDERLYING CONDITIONS AND ITS PHARMACOLOGICAL THERAPY IN A TERTIARY CARE HOSPITAL

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Abstract: The present work aims to study the occurrence of sepsis due to underlying conditions among inpatients who are hospitalized. The primary objective of the present work is to study various underlying conditions which may cause sepsis, to investigate the number of events of sepsis as per age, to investigate the number of events of sepsis as per gender, to enlist the micro-organism that causes sepsis, to explore the treatment pattern prescribed to the subjects. The present study is a prospective observational study on the occurrence of sepsis (ICU) in the medicine department at a tertiary care hospital. In the present work, all the patients who fulfilled the criteria for sepsis are enrolled in the study patient demographics, clinical examination, prescription data, laboratory tests, progress notes and complete patient records were collected for 180 subjects (patients) using well-developed data collection form. Among 180 patients, 177 were diagnosed with sepsis, of which 115 were males, and 65 were females. Most of the patients diagnosed with sepsis wear geriatrics compared to adults and paediatrics. The present study revealed that elderly patients have more co-morbidities compared to adults and paediatric patients. The most highly used drugs in the management of sepsis are beta-lactam antibiotics. The present study revealed that males are more prone than females to infect with sepsis. The prescribed pharmacotherapy for sepsis patients was under the Standard Therapeutic Guidelines. The mortality rate is reduced due to proper treatment regimens and prompt diagnosis.

Keywords: *Sepsis, Therapeutic Guidelines, Clinical Pharmacist Role*

PT/ST5/00128

HOSPITAL WASTE: TYPES, HAZARDS, PREVENTION AND SEVEN R'S OF MANAGEMENT

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Abstract: As the health care services are improving and increasing their reach even in underdeveloped countries, so is the problem of health care waste (HCW) as hospitals generate a relatively huge amount of HCW, which consists of general as well as hazardous waste. Infectious HCW is a major threat to the health of humans and animals as it has the potential to spread various infectious diseases to the human and animal population. HCW also leads to leaching chemicals, heavy metals like Pb, Cd, Cr, radioactive substances, and even generating carcinogens like dioxin in the environment contaminating air, soil, and water in general and especially in areas surrounding HCW dumping or processing affecting health and quality of life of flora and fauna in those areas. The present work focuses on sources, types, and various environmental and health hazards related to HCW and management strategies for minimum effects with an eco-friendly and sustainable approach.

Keywords: *Health care waste, biodegradable, infectious waste, sharp, cytotoxic waste, radioactive waste, environment,*

PT/ST5/00129

CHANGES IN BLOOD SUGAR, LIPID PROFILE AND BODY WEIGHT IN PATIENTS RECEIVING TREATMENT WITH SECOND-GENERATION ANTI-PSYCHOTICS IN THE PSYCHIATRY DEPARTMENT OF A TEACHING HOSPITAL

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Abstract: Anti-psychotic drugs can greatly benefit treating a wide range of psychiatric disorders, including schizophrenia and bipolar disorder. The study aims to evaluate the changes in blood sugar, body weight and lipid profile in patients receiving treatment with second-generation antipsychotics. The study's objectives include assessing changes in body weight, blood sugar, and lipid profile in patients prescribed second-generation anti-psychotics and identifying the drug which has more incidences of altering the above set of parameters in the study sample. It was a prospective observational study of patients attending the Psychiatry department in NRI General Hospital who were prescribed between ages 18 to 60 years. Atypical antipsychotics in drug-naive were included in the study. The study was conducted over six months, from November 2017 to April 2018. Pregnancy and lactating women, patients with a history of hepatic disease, and patients with significantly altered medical conditions were excluded from the study. The study subject groups who have prescribed Quetiapine (69.55±14.02) and Amisulpride (68±15.73) showed more weight gain, and Lurasidone (66.77±9.28) group showed the least weight gain after four weeks. The study sample on the Quetiapine group showed elevated total cholesterol levels (157.77±22.58), decreased HDL- cholesterol levels (41.66±8.33), elevated LDL- cholesterol

levels (111.3±12.10), elevated triglyceride levels (136.22±48.80), and elevated blood glucose levels (89.44±6.36) after four weeks. The study sample on the Amisulpride group showed decreased total cholesterol levels (147±15.46), decreased HDL- cholesterol levels (48±20.26), decreased LDL- cholesterol levels (104.4±16.83), decreased triglyceride levels (126.8±11.96), elevated glucose levels (88±9.30). But Lurasidone group showed no significant change in Total cholesterol, HDL-C, LDL-C, Triglycerides, and blood glucose levels compared with all three drugs after four weeks. From the results obtained, it was concluded that Quetiapine and Amisulpride groups exhibited a significant change in body weight, blood glucose, and lipid profile among all three groups, and the Lurasidone group showed no significant change in the parameters mentioned above.

Keywords: *Atypical antipsychotics, weight gain, blood glucose, total cholesterol, HDL cholesterol, LDL cholesterol, triglycerides.*

PT/ST5/00133

A Prospective, Open-Label, Parallel Group Clinical Trial to Evaluate Safety and Efficacy of Low Dose Radiation Therapy for Covid-19 Pneumonia: As add on to Standard of Care for Treatment of Moderate to Severe Patients with Covid-19 Disease

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Abstract: Novel Corona Virus (SARS-CoV-2) is known to infect the respiratory tract. The extent of infection varies in severity from asymptomatic, mild, moderate to severe infections. Critical cases causing Respiratory Failure, which is the hallmark of Acute COVID-19, is leading cause of mortality due to COVID-19 pandemic. LDRT induced polarization of M-2 Phenotype that triggers the anti-inflammatory processes. It also suppresses the M-1 Phenotype resulting in suppressing of Inflammatory process. The primary objective is to evaluate the efficacy of Low dose radiation therapy with Standard of care in Confirmed RT-PCR positive patients with Moderate Coronavirus Disease. LDRT was delivered employing 2 opposed antero-posterior and postero-anterior open portals. The study includes up to Days -4 to Day 1 of screening period and 5 days of treatment period and follows up of 28 days. Oxygen saturation level was continuously monitored during the entire treatment. The study was conducted on 25 patients with their consent. All patients were treated as per the Institute COVID-19 standard management guidelines along with intervention of LDRT to both lungs with a dose of 70cGy in single fraction. Patients with clinical improvement at Day 14 were summarized with frequency count and percentage. The results were conclusive with recovery rate of 88%, decrease in inflammatory markers, reduced Co-Rads in 76% of patients and up to 50% reduced oxygen demand from the baseline in patients.

Keywords: *Low Dose Radiation Therapy, Covid 19, Co-Rads, Inflammatory, Phenotype*

PT/ST5/00134

A Cross-Sectional Study on the Assessment of Adverse Drug Reactions in Patients with Tuberculosis in a Tertiary Care Hospital

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Abstract: Mycobacterium tuberculosis is the cause of tuberculosis, a chronic infectious disease that increases morbidity and mortality. Anti-tubercular medication adverse drug reactions can lead to non-compliance and therapeutic failure. The goal of the current study was to identify adverse drug responses brought on by anti-tubercular medications and to evaluate them using causality and severity measures. All patients with tuberculosis who were admitted during the study period and who satisfied the study's eligibility requirements were included, underwent drug reaction monitoring, and causality assessment, severity, and preventability evaluated. 301 individuals in all were monitored throughout the study period, and 75 of them experienced negative medication responses. The gastrointestinal system was discovered to be the system most frequently linked to adverse reactions (32%). Both the WHO and Naranjo scales concluded that the majority of adverse medication responses were "possible" reactions to causality assessments. According to Hart Wig *et al* assessment 's of the severity of adverse medication reactions, 62.66% of these reactions were "mild" and 37.33% were "moderate." According to the preventability evaluation, the majority of negative medication reactions were "probably preventable." The current study demonstrates that there is need in a system for routine monitoring of adverse drug reactions may assist to reduce morbidity, enhance patient compliance, and produce better therapeutic results.

Keywords: *Adverse drug reactions, Severity assessment, Tuberculosis, Causality assessment.*

PT/ST5/00135

PREVALENCE OF NON-COMMUNICABLE DISEASES AND CURCUMIN USE- A MULTI CENTRIC STUDY TO CORRELATE THE IMPACT

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Abstract: Non-communicable Diseases (NCDs) are increasing rapidly all over the world, on the other hand, curcumin has various medicinal properties against NCDs and it is a major ingredient in our household/recipes. Another important factor for the selection of this study was the outbreak of COVID-19 and people had increased awareness about turmeric/curcumin use during this pandemic situation. To find out the prevalence of non-communicable diseases across various centers and correlate with the usage of curcumin in these centers. A descriptive cross-sectional study was performed at 4 centers in the state of Tamil Nadu, India for a duration of 6 months. A simple random sampling method was adopted to choose the households and then a self-structured questionnaire has been given to collect the details like demographic and disease status with turmeric use and their awareness status. A total of 1276 households were included with 4495 family members. Among the population, the prevalence of non-communicable diseases is cardiovascular diseases (7.7%) followed by diabetes (7.6%), arthritis (3.6%), asthma (0.9%), cancer (0.1%), Alzheimer's disease (0.2%), psoriasis (0.5%) and others (1.5%). The average years of turmeric use (42.8 years) among the households and the average amount (1.8 gram) of curcumin in their daily recipes were found along with the average daily curcumin use of 0.54 grams. By applying the Mann-Whitney U test, there was a significant association between diabetes and arthritis with curcumin use was verified. The present study highlights that the prevalence of diabetes and arthritis was significantly associated with curcumin use. On the other side, people in India were more aware of curcumin as a medicinal herb and consumed higher amounts particularly during the COVID-19 pandemic.

Key words: *Curcumin, Non-communicable Disease, Diabetes, Arthritis, Correlation*

PT/ST5/00136

A COMPARATIVE STUDY OF KNOWLEDGE, ATTITUDE AND PERCEPTION OF JAUNDICE AMONG PARAMEDICAL AND NON-PARAMEDICAL STUDENTS

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Abstract: Jaundice is defined as the yellowing of the skin and whites of the eyes which are caused by a build-up of a substance called bilirubin in the blood and tissues in the body. Bilirubin is a yellowish pigment formed by the breakdown of heme, which occurs largely in hemoglobin and red blood cells. The purpose of this study was to analyze and compare the knowledge, attitude, and perception of Jaundice among paramedical and non-paramedical students**.** A Comparative cross-sectional study was conducted in South India for a period of 6 months from May 2021 to October 2021. The Knowledge, Attitude, and perception questionnaire was used to obtain respondents information. The data collected were tabulated, analyzed, and interpreted using standard statistical tools. The statistical procedure was undertaken with the help of the statistical package Instat and Prism version 6.0. The comparison was done by the Chi-square test. A total of 818 students were selected and divided into two groups such as 409 paramedical students and 409 non-paramedical students. This study concluded that Paramedical students had better knowledge and attitude than non-paramedical students. Many students of both paramedical and non-paramedical students have a positive perception of jaundice and only a few of them have a negative perception of jaundice. So, we are recommending many awareness programs, seminars and workshops that need to be conducted for all the students especially non-paramedical students to enhance their knowledge and attitude toward Jaundice.

Keywords: *Jaundice, Knowledge, Attitude, Perception, Paramedical Students, Non-Paramedical Students.*

PT/ST5/00137

KNOWLEDGE, ATTITUDE, PRACTICE ON CAFFEINE AND CAFFEINATED BEVERAGES CONSUMPTION AMONG COLLEGE STUDENTS

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Abstract: Caffeine is a substance that is an alkaloid that belongs to the class of methylxanthines and it is a naturally occurring chemical stimulant said to be caffeine (1, 3, 7-trimethylxanthine). The caffeine chemical formula is C8-H10-N4-O2. The objective of the study is to study the impact of knowledge, attitude, and practice of caffeine and caffeinated beverages among students and to create awareness based on caffeinated beverages. The data collected were tabulated, analyzed, and interpreted using Standard statistical tools and Microsoft excels 2010. The statistical procedure was undertaken with the help of the statistical package Instat and prism version 6.0. The comparison with age was done by the Chi-Square test. The results show that 91.88% of students have knowledge about caffeine and 73.43% consume caffeine mostly from 18-21 years of age and only a few of them have no knowledge and they don't consume caffeine. The majority of the students 42.43% was thinking that caffeine consumption has increased over the years and believed that consumption of coffee can get relief headaches but their level of caffeine consumption increased over the exam period. 36.53% were experiencing headaches when they suddenly stopped caffeine consumption and few of them said that they were experiencing side effects while taking caffeine. The results of the study are to the students need an awareness program to develop proper knowledge and also beneficial to prevent future health-related problems.

Keywords: *Caffeine, Caffeinated beverages, Students, Knowledge, coffee*

PT/ST5/00138

CLINICAL PATTERNS OF LOWER RESPIRATORY TRACT INFECTION AND THEIR PRESCRIPTION PATTERN ANALYSIS OF PAEDIATRIC PATIENTS IN A TERTIARY CARE HOSPITAL

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Abstract: LTRI is the largest cause of morbidity among children under five across the world. The World Health Organization (WHO) estimates that 2 million children under five years of age die due to pneumonia. In developing countries 30% of adults and 25% of pediatric inpatients are diagnosed with acute respiratory tract infection. The use of antimicrobial agents has become a routine practice for the treatment of pediatric illnesses, and antibiotics are among the most commonly prescribed drugs in paediatrics. Rational use of antibiotic is very necessary to avoid resistance. The present study is to analyse the prescription pattern used in pediatric patients with lower respiratory tract infections. Paediatric patients diagnosed with LRTIwhose patient case records having complete documentation of information, during the study period were included in the study. From the 236-patient data collected most affected by LRTIs belong to age > 1 year (60.17%). Males (66.95%) were mostly affected by LRTI compared with females (33.05%) and 82.20% were vaccinated and paediatrics were more prone to acute bronchitis (66.95%). In this study we found that Amoxicillin + Clavulanic acid (31.32%) followed by azithromycin (25.99%) and ampicillin (15.55%) were the most frequently prescribed antibiotics. 2270 drugs were prescribed in total with an average of 9.62 drugs per prescription, of this only 69 drugs prescribed in generic name. It was observed that prescription from NLEM was 3.35 drugs, suggesting rational approach in giving the treatment, but prescription by generic name was not there which needs the improvement. This study will help the clinicians to know about pattern of antibiotics used and types of LRTI in paediatric patient.

Keywords: *LRTI, Pediatric, Prescription Pattern Analysis, NLEM*

PT/ST5/00139

ASSESSING THE PREVALENCE OF RESPIRATORY SYMPTOMS AND QUALITY OF LIFE AMONG TEXTILE MILL WORKERS - NAMAKKAL DISTRICT, TAMIL NADU

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Abstract: The prevalence of occupational lung disease among workers in various textile mills is a significant problem. Long-term exposure to cotton dust can cause an abnormally large annual loss of forced expiratory volume in one second (FEV1) and a higher proportion of people with persistent respiratory problems. People exposed to cotton dust also reported airway allergies and a positive skin reaction. The objective of the study is to assess the prevalence of respiratory symptoms among textile mill workers in Namakkal district -Tamil Nadu. 400 workers were included in this study. Prevalence monitoring data was collected via a pre-tested and structured interviewer-administered questionnaire adopted from the American Thoracic Society division of lung disease and quality of life was assessed through Rand 36 questionnaire. The study shows nearly 91.9% of the subjects had respiratory complaints. The majority of the workers experienced breathlessness and cough. Age, educational status, experience, smoking, alcohol habits, and usage of the mask were significantly associated with the respiratory symptoms. Workers who were between ages 18-30, educated above secondary, with experience ≤5, working in the weaving section, who were without respiratory symptoms and using masks experience a better quality of life. This study concluded that the level of respiratory symptoms in textile mill workers was relatively high. Educating the workers about the consequence of cotton dust exposure, encouraging the use of masks and the provision of personal protective equipment (masks) are the important task to be followed to reduce respiratory symptoms in textile mills.

Keywords: *Textile mills, Cotton dust, Respiratory symptoms, Quality of life*

PT/ST5/00140

DOSAGE REGIMEN OPTIMIZATION USING PHARMACOGENOMICS AND PHARMACOMETRIC APPROACHES

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Abstract: Lamotrigine (LTG) is the most widely used anti-epileptic drug in pregnancy due to its low teratogenicity. However, there is an increased metabolism & clearance (CL/F) of LTG in pregnancy attributing to suboptimal drug therapy and poor disease control, prompting the need for pro-active dosage adjustments. The present study aimed to simulate the steady state trough plasma concentrations (C Trough SS) of LTG in pregnancy using reported population model predicted clearance values to facilitate optimal dosage regimen recommendations in pregnancy. A previously developed population model of LTG in pregnancy that included 60 women and described the influence of gestational weeks on CL/F was adopted. Using the clearance values from this model and other pk parameters from literature, plasma concentrations were simulated for 200mg BID regimen using PUMAS version 1.1.0 for a total of 400 virtual patients with 100 in each group of preconception stage, trimester 1, 2 and3. The therapeutic window of 2.5–15 mg/L was used as reference to optimise the dosage regimen of LTG. The simulated mean C Trough SS of LTG in non-pregnant and pregnant women at 3 trimesters were found to decrease significantly (p<0.001) as 4.31±1.14, 3.17± 0.93, 2.14±0.86, 1.51±0.65 respectively. The simulation studies revealed that the doses of 175mg, 225mg and 250mg twice daily, in trimesters 1, 2 & 3 respectively achieve the C Trough SS of LTG above 2.5 mg/L, identical to preconception stage. Thus, dose-optimisation studies are warranted in clinical settings to evade the therapeutic failure related to increased clearance and subtherapeutic plasma concentrations of LTG in pregnant women.

Keywords: *Lamotrigine, Epilepsy, Pregnancy, Clearance, Simulation*

PT/ST5/00141

A STUDY ON COMPLIANCE OF CRASH CARTS TO THE STANDARDS IN SELECTED AREAS OF A TERTIARY CARE TEACHING HOSPITAL

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Abstract: A resuscitation trolley or crash cart plays an inevitable role in improving the response time of cardiopulmonary resuscitation. Crash carts refer to the set of drawers or trays on wheels which is used to store and transport equipment and medications to the site of the emergency to save a life in life-threatening situations. The resuscitation trolley should be standardized throughout the organization for ensuring optimum care. The requirement and availability of crash carts vary in different organizations. To study the compliance of crash carts to the standards in selected areas of the hospital. A prospective study using a standard checklist was conducted in 47 crash carts located in various areas of the hospital that were taken into consideration for the study and the observations were entered in an excel sheet and analysis was done using statistical software to realize the objectives. Various factors like defined drug stock, mixing of drugs, availability, and functionality of equipment, the functionality of defibrillators, labeling of drawers and drug containers, condition of oxygen cylinders, documentation, and periodic restocking of drugs were evaluated. The observations showed a lack of compliance with respect to many of the factors considered for the study. 44.68% of the areas had defined drug stock but 55.32% did not have the defined drug stock, mixing of drugs in 6.38% of crash carts, restocking of drugs was not done periodically in 53.19% of the areas including wards and ICU's. Periodic audits should be conducted to ensure proper maintenance of carts and the resuscitation committee should be actively functioning within the organization to handle cardiopulmonary emergencies efficiently.

Keywords: *Emergency Medication, Crash carts, Compliance, Resuscitation Council.*

PT/ST6/001

Pharmaceutical Impurities and their regulatory considerations in US DMF Filing

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Abstract: A Drug Master File (DMF) is confidential information submitted to the Food and Drug Administration (FDA) about equipment, procedures, or articles used in the production, refining, packaging, and storage of one or more individual human products. If the FDA notices flaws in the details contained in a DMF, the DMF holder will receive a letter explaining the flaws. Concurrently, the FDA will alert everyone who depends on the inadequate DMF data that more information is needed to maintain DMF as adequate. 96% of DMFs being reviewed for the first time are found inadequate and issued a DMF complete response letter. Most of these DMFs will receive two or three touches before becoming adequate. Reducing both the total number of review cycles and the time for a response from the DMF holder is critical to increasing the chances for a first cycle ANDA approval. Based on analysis from Division of Life cycle API, out of all significant deficiencies, 68% of considerable shortcomings are on "Qualification of Impurities"; hence it is essential to understand the DMF deficiencies and Impurity related regulatory requirements, which help in reducing the time for responding to DMF deficiency letter issued and the number of review cycles, which have their impact on first cycle ANDA approval. As to improve the DMF review process timelines and increase the approval rate of generic application, understanding deficiencies related to impurity profiling and required regulations helps in decreasing the deficiencies arising during the review process.

Keywords: *USDMF, Pharmaceutical Impurities, ANDA, DLAPI, DMF CR.*

PT/ST6/002

Regulatory Considerations for Aesthetic Devices in the USA

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Abstract: Micro needling is a painless, safe, and efficient therapy that takes minimal time and effort. It was formerly used for skin restoration, but it is now used to treat a wide range of diseases, like skin break out wounds, skin break out, post-horrible/consume scars, alopecia, skin resurrection, drug conveyance, hyperhidrosis, stretch imprints, and more. Furthermore, major advances in the underlying technology used for micro needling have been accomplished in the last ten years. To achieve greater outcomes, this method could be used with other stringent strategies. It's especially safe for people with dark skin, who are more prone to post-inflammatory pigmentation from other treatments that harm the epidermis. The microneedle, a highly efficient and flexible device, has sparked scientific and industrial interest in recent decades due to key attributes such as painless penetration, low cost, high therapeutic efficacy, and relative safety. As a promising device, microneedles have made significant progress in the realms of illness therapy, immunobiological administration, disease diagnosis, and cosmetic applications. The main objective is to understand the regulatory consideration, use of the devices, treatment conditions and approval process of Aesthetic (cosmetic) devices in US.

Keywords: *Micro needling, Cosmetic, Device, FDA, Skin, Treatment.*

PT/ST6/005

Initiatives Undertaken For Developing Paediatric Medical Devices: A Comparative Study Among Developed Nations

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Abstract: Recently, medical devices have gained importance among the pharmaceutical manufacturers. The manufacturing of medical devices for paediatric population is yet to gain importance. Most of the devices used for the adult population are repurposed and used off-label in the paediatric population. The repurposed devices do not meet the unique requirements of paediatric growth pattern. Getting marketing approval for paediatric devices is challenging due to various barriers such as small market size, heterogeneity, customizing based on body size, higher activity levels compared to adults and ethical considerations during trials involving children. Moreover, the recruitment of participants for clinical trial is challenging in paediatric population. The USFDA has recently released guidance documents to overcome the challenges of extrapolating the adult data in paediatric population. Furthermore, collaborative programs between nations have been initiated to optimize the medical device innovations for paediatrics. This poster is an attempt to understand the regulatory scenario in developing paediatric medical devices among the developed nations.

Keywords: Medical devices, Paediatrics, USFDA, risk-benefit, guidelines, Regulatory compliance

PT/ST6/007

Performance Qualification of Sterilization Autoclave

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Abstract: Sterilization of products is important in pharmaceutical industries because it has a significant effect on both preventions of contamination and the effectiveness of a sterile production environment. A standard method for sterilizing loads has been established. The current work is about the performance qualification of a double door sterilization autoclave. Data from development cycles were used to set parameters for the performance qualification. The study aims to first develop the sterilization process parameters before implementing the sterilization process. Utilizing the performance qualification protocol for autoclave sterilization, the qualification was performed. This work represents the study of heat distribution and heat penetration patterns inside the chamber of a sterilization autoclave. The sterilization of the autoclave was achieved at different places inside the chamber and the desired temperature is attained which is required to sterilize the load present inside the autoclave. The effect of temperature on a chemical and biological indicator in the sterilization autoclave was observed. Based on the work performed the equipment was found to comply with the functional requirements at the operating range for various load patterns.

Keywords:

Sterilization, Autoclave, Performance Qualification, Load Pattern, Sensors, Data Logger.

PT/ST6/008

Process Validation of enrofloxacin injection USP 100 mg/mL, 100 mL fill

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Abstract: Process Validation is the assessment of process design, manufacturing flow, and continuous monitoring of the product manufacturing. The process is examined under normal conditions and also under sheer circumstances to check the robustness of the manufacturing design. The main aim of process validation is to ensure that a particular process flow, design space, and manufacturing line will be able to produce a product of consistent quality that meets its predetermined specifications. In this research, process validation of Enrofloxacin Injection USP, 100 mg/mL, 100ml, has been performed according to guidelines prescribed by USFDA. It includes the identification of Critical Quality Attributes and Critical Process Parameters of the medicament, along with which risk assessment has been carried out based on the principles of the Lifecycle Approach of Process Validation. The lifecycle approach includes validation of the initial stage to the final stage of the process flow rather than focussing on a finished product analysis, thus a well-structured sampling plan was designed in validation protocol prior to the manufacturing of batches. The number of Validation batches required was calculated based on the risk assessment. The in-process results of all three validation batches were satisfactory and can be concluded that the prescribed manufacturing flow can consistently produce drug products according to the predetermined specifications.

Keywords: *Enrofloxacin, Process validation, CPP, CQA.*

PT/ST6/009

RP-HPLC Method Development and Validation for Simultaneous Estimation of Cilnidipine, Metoprolol Succinate and Chlorthalidone in Combined Tablet Dosage Form

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Abstract: The aim of the present work is to develop RP-HPLC method development and validation for simultaneous estimation of cilnidipine, metoprolol succinate and chlorthalidone in combined tablet dosage form. The chromatographic separation of drug was achieved using Hypersil ODS C18 (250*4.6 mm) column with mobile phase consisted of Acetonitrile: Buffer (60:40 % v/v) pH 4.5 at flow rate of 1.0 ml/min with ultraviolet detection at 215 nm. Cilnidipine, metoprolol succinate and chlorthalidone were successfully eluted at the retention time of 3.112, 7.194 and 4.793 min respectively with good resolution. The Described method was linear over a concentration range of 5 – 25 µg/mL of cilnidipine, 25 – 125 µg/mL of metoprolol succinate and 6.25 – 31.5 µg/mL of chlorthalidone. The method was validated according to the International conference on harmonization guidelines. The validation results showed good precision, accuracy, linearity,specificity and robustness. Successful separation of estimation of cilnidipine, metoprolol succinate and chlorthalidone were achieved by the proposed method. The developed method can be applied for the routine analysis in pharmaceutical formulations.

Keywords: *Cilnidipine, Metoprolol Succinate, Chlorthalidone, High –Performance Liquid Chromatography method, Method Validation.*

PT/ST6/0010

Regulatory Challenges for Abbreviated new drug application in US market with post approval requirement

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Abstract: To get the marketing authorization of generic product in United State of America, the approval of Abbreviated new drug application is required from Food and Drug Administration (FDA) before distribution of generic product in the market.

The Application must contain all required technical information when submitted to FDA's Centre for Drug Evaluation and Research, Office of Generic Drugs, provides for the review and ultimate approval of a generic drug product.
To meet the regulatory challenges for ANDA submission, The Pharmaceutical Industry have to study about the content and format of Abbreviated new Drug Application with approval process. The incomplete applications are often refused to file and the accepted applications some time get disqualified due to technical deficiencies at the manufacturing site. The objective is to meet regulatory challenges and reduce the deficiency raised by FDA and get approval within time frame.
The information about content and format of Abbreviated new Drug Application with approval process was evaluated and provided case studies to understand the requirements for application properly. The content of CTD format and electronic submission in the form of eCTD was provided with similarity and differences. The requirements for Post approval changes after approval of ANDA were evaluated with case study. ANDA application is quite complex with respect to patent rights and BE evaluations.
The approval of ANDA application require complete application as per CTD content in eCTD format for submission and review purpose to FDA.
Keywords: *ANDA, FDA, CTD, eCTD, Generic product*

PT/ST6/0015

Vaccine Development and Approval in Canada

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Abstract: In the development of medications for the treatment of severe and life-threatening disorders, expedited programs are commonly employed. Vaccination is one of the most significant successes in public health around the globe. For more than fifty years, the biological product has helped to avert and control the blowout of hazardous illnesses, saving countless lives. But the continuing effectiveness of vaccination programs is jeopardized by a lack of trust in vaccine safety. Public health initiatives in Canada aim to establish and sustain public confidence in immunization safety. Vaccine safety competency may be improved by monitoring the phases in vaccine development, providing evidence-based information about vaccination benefits and hazards, reporting, recognizing, and managing adverse effects following immunization (AEFI) in the practice environment. Vaccines are regulated by Health Canada using scientific and clinical data to assess a vaccine's safety, effectiveness, and quality. Allowing only safe, effective, and high-quality vaccinations to be approved, with the benefits outweighing the dangers. The Canadian Adverse Events Following Immunization Surveillance System (CAEFISS) monitors vaccination safety. Vaccine must be able to elicit a sufficient immune response in vaccinated individuals, demonstrating that it can protect against illness. Quality evaluators from Health Canada may visit the production plant to evaluate the quality standards. Once Health Canada approves a new vaccination for sale, post-market surveillance is done to monitor the safety and efficacy of vaccine. Thus, expedited programs aid in the identification of the most promising medicines and the creation of new pharmaceuticals to help individuals with serious or life-threatening conditions.

Keywords: *CAEFISS, vaccines, AEFI, Health Canada*

PT/ST6/0016

An Overview of Orphan Drug Regulations in the EU

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Abstract: Regulation on orphan medical products was enacted in the European Union in 2000, with the goal of benefiting patients who suffer from serious and uncommon illnesses for which there is currently no adequate therapy. European orphan legislation has now been in place for twenty years, with about 2,400 orphan-designated medicines and more than 190 orphan items awarded by European Commission approval (COMP). As our knowledge of rare illnesses grows, so does our grasp of the evidence needed to support the inclusion of new items in the framework. In this article, we'll talk about the COMP, or the Committee for Orphan Medicinal Products, as well as the distinctions between EU and US procedures for orphan drug designation, market exclusivity for orphan medicines, the EU's regulatory route for orphan drugs, and European orphan drug pricing.

Keywords: *Committee for Orphan Medicinal Products (COMP), European Medicines Agency (EMA), Orphan Medicinal Products (OMPs), Orphan Drug Regulation (ODR), Marketing Authorisation (MA)*

PT/ST6/0018

A comprehensive study on challenges and implications for informed consent process in vulnerable populations

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Abstract: Drug development is the process of bringing a new pharmaceutical drug to the market once a lead compound has been identified through the process of discovery. For a drug to get approved and enter into the market it has to prove its safety and efficacy in clinical trials. As no individual has right to infract the fundamental right of another person for the sake of fulfilling his own purpose, an important tool called “Informed Consent” came into existence. Informed consent as a fundamental principle of clinical ethics has developed within the past 50 years. In this project we mainly focused on informed consent in vulnerable people. The term "vulnerable groups" is usually synonymous with "groups at risk". Legally, children are not able to give true informed consent until they turn 18. The essential components of consent for patient/child: Voluntariness Capacity. Prisoners may represent a vulnerable population secondary to possible coercion and limited capacity for voluntary informed consent Basic ethical principle for prisoners Autonomy Beneficence Non-maleficence Justice. When a research activity involves pregnant women as participants’, both mother and father must be informed about any potential impact of the research on the fetus. Both mother and father must consent to the woman’s participation in the research. some of the challenges involved in informed consent of geriatrics like Informed consent Confidentiality Competence Multiple relationships Fees Special issues are also discussed.

Keyword: Informed consent, vulnerable groups, Non maleficence justice.

PT/ST6/0019

Biosimilars Regulatory criteria for Marketing authorization in Europe

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Abstract: The EU was the first agency in the world to establish a framework for policy and law governing the acceptance of biosimilar medications. The European Medicines Agency (EMA) defines a biosimilar as a biological drug that is comparable to another biological drug that has already received approval for use. Biological activity and effectiveness, safety, and immunogenicity profile are all factors that must be highly comparable for a biosimilar to be developed. The proof of biosimilarity, or a high degree of resemblance to the reference product in terms of quality, safety, and effectiveness, is the foundation for biosimilar approval. As technology and analytical methodologies progress and new targets for the development of biosimilars become available, the regulatory landscape for biosimilars continues to change. Biosimilar drugs increase patient access while growing the biotherapeutic industry. This study examined the market environment for biosimilar pharmaceuticals in the US and Europe, as well as the regulatory authorisation, market accessibility, and clinical review that these products through before receiving regulatory clearance. After the legal basis for biosimilars had been created, the EMA issued precise recommendations to handle all facets of the development, manufacture, testing, and regulation of biosimilar medications. This study reveals the regulatory information, history and guidance on biosimilars and their applications. The production of biosimilars must also abide by the strict rules and specifications outlined by the WHO, GMP, and GCP.

Keywords: *Biosimilars, regulatory pathways, regulatory agencies, biological medicinal products.*

PT/ST6/0020

Regulatory Aspects of Medical devices in Australia

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Abstract: A medical device can be any tool, gadget, appliance, substance, or other object designed for human use for the diagnosis, monitoring, treatment, or compensation of an accident or impairment. The prime purpose is to place a product into the market for timely use by the public, irrespective of time & money invested. In order to achieve public expectations, the firm needs to comply with the regulatory prerequisites set by the targeted agencies. The Therapeutic Goods Administration of 1990 is followed by the Australian regulatory authorities. The Office of Device Authorization is in charge of premarket regulation, and the Office of Product Review is in charge of post market regulation. The primary aim is to support business visionaries who produce products for medicinal services is to promote regulatory awareness that governs product development and ensures administrative continuity. The TGA, which oversees the regulation of Australian medical devices and categorizes them using a risk-based assessment or methodology, has specified a number of characteristics that determine the scope of regulation. It seems to be used as a starting stage to final product. Instead of placing a set of rules, the document speaks about the specific concepts and principles of complex issues.

Keywords: *Regulations, Regulatory prerequisites, Premarket regulation, Post market regulation, Therapeutic Goods Administration.*

PT/ST6/0021

Biologics Regulatory criteria for marketing authorization in Japan

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Abstract: A biologic medicine (also known as a biologic) is a medication that is created using living things or that contains elements from living things. Products manufactured from people, animals, or microbes utilising biotechnology fall under this category. Biologic medications come in a variety of forms, including vaccines, tissues, blood, blood components, allergens, genes, and recombinant proteins. The most cutting-edge treatments now accessible, biologic medications are used to treat a wide range of illnesses and ailments. Examples of medical use of biologics drug are various cancer, rheumatoid arthritis, psoriasis, crohn's disease and other autoimmune diseases. Biologics are regulated by two crucial regulatory bodies that review and approve drugs and medical devices which the Pharmaceuticals and Medical Devices Agency (PMDA) and Pharmaceutical Affairs and Food Sanitation Council (PAFSC) have recommended to the Minister of Health, Labour, and Welfare (MHLW) in japan. The PAFSC and PMDA had created a framework based on standards such the product's quality, safety, and efficacy. and it had also considered the rules of the Good Manufacturing Practice (GMP), World Health Organisation(WHO), General Cartographic Transformation Package (GCTP) and Good Clinical Practice (GPC). The framework was developed to specify the guidelines, rules and regulations. This study indicates about the history, guidelines and regulation information of the biologics in the Japan.

Keywords: *Biologic medicine, pharmaceutical and medical device agency, framework.*

PT/ST6/0022

Temperature mapping study of Deep freezer

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Abstract: Storage devices, such as Deep freezer are used in pharmaceutical industries to store the raw materials/finished goods.Deep freeze is not a very complicated machine, mechanically speaking. Deep freeze have the body , which is just an insulated box with a lid, or doors, depending whether deep freeze have a chest type , or shelf type. To qualify such device, various regulatory guidelines suggest storage devices to be qualified with a worst case approach. This work envisages the theoretical and practical concepts of temperature mapping and various tests performed for the qualification of deep freezer. Before start of work, a protocol was prepared to carry out qualification activities including the critical parameters for effective mapping. The test performed for the qualification of deep freezer are Empty chamber study, Loaded chamber study, Power Failure study, Door open and Recovery study, Come up study. A mapping study measures temperature fluctuations.From these data , the analyst can identify the minimum and maximum temperature that occur in the mapped area during the study period.The overall test performed for mapping resulted in effective distribution of temperature and relative humidity (RH). Multi-channel data loggers with resistance temperature detector (RTD) or wireless temperature and RH loggers are used and one successful temperature .Hence the results obtained from the mapping study concluded/revised that the deep freezer is qualified for the intended purpose.

Key words:Temperature, Deep Freezer,Qualify, Power failure study

PT/ST6/0023

Active Packaging For Nutraceuticals And Dietary Supplements: Use Of Light (Photo) Barrier Additives

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Abstract: "Any substance that is a food or a component of a food that can produce medicinal and health advantages, including the prevention and treatment of disease," is what is meant by a Nutraceutical. “Dietary supplement, on the other hand, is any vitamin, mineral, herbal product, or other ingestible preparation that is given to the diet to improve health”. Many studies have been conducted on the complexity of the components and their possible health benefits. One of the main leading causes of components or parts degradation is photo-oxidation; it reduces the nutritional content and sensory quality of products and may potentially result in hazardous chemicals. However, increased quantities of nutrients call for special packaging considerations. It is possible to create active packaging for nutraceuticals and dietary supplements by including light-absorbing or light-blocking compounds in the polymers. New light-barrier materials have been suggested as alternatives in recent years for a variety of applications. With a focus on chemical compounds produced by photosensitized reactions, such as reactivated oxygen species (ROS) in the form of oxygen radicals and their process, this work analyses contemporary technologies in the light absorber and blocking material.

Keywords: *Active packaging, Light absorber, Light sensitive ingredients, Photo-oxidation, ROS*

PT/ST6/0024

Application And Status Of Probiotic As Pharmaceuticals & Regulatory Guidelines And Safety Of Probiotic

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Abstract: Probiotics are described as "live bacteria that, when provided in suitable proportions, impart a health benefit on the host" by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO). In this contemporary day, using probiotics to treat and manage illnesses is a novel approach. Probiotics are classified by various regulatory bodies as bio-logics, pharmaceuticals, medical foods, dietary supplements in the United States, functional foods in Japan, Europe, and China, nutritional supplements, etc. As a result, different regulations apply to probiotics depending on the regulator. The possibility of diseases like bacteremia or endocarditis, toxic or metabolic effects on the gastrointestinal tract, and the spread of antibiotic resistance in the gastrointestinal flora are three speculative worries about the safety of probiotics. In this the safety of probiotic use or research is examined and discussed.

Keywords: *Probiotics, bacteremia or endocarditis, regulatory agencies, safety*

PT/ST6/0026

Regulatory Actions against Misbranding and Adultration

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Abstract: Globally every country is the victim of misbranded or adulterated drugs, which result in life threatening issues, Financial loss of consumer and manufacturer and loss in trust on health system. The Regulatory Affairs professional's job is to Keep track of the ever-changing legislation in all the regions In which the company wishes to distribute its products. For minimizing adulterated and misbranding Drugs or not of standard quality drugs, there is urgent requirement of more stringent regulation and legal action against the Problem.The adulteration and substitution of crude drug is a burning problem.substitution is helpful in places where Unavailability of particular crude drug and or unwanted adverse effects of desired crude drug are there and have a choice of Other drug with similar pharmacological effect and less unwanted after effects. But in most cases, it is unacceptable because the Conversion of authentic drug into substandard drug may cause variety of adverse effects from mild and moderate to severe life threatening reactions. This research work is an attempt to study different types of drug adulteration such as Substitution with artificially manufactured drug ,Volatile oil containing drugs, its reasons, health hazards and its control measures. However, India has taken some preventive steps in the country to fight against the poor Quality of regulatory organization drugs for protecting and promoting the public health.

Keywords: Adulteration, Misbranding drugs, types of adulteration, Crude drug.

PT/ST6/0028

Drugs Approved via the 505(b)(2) Pathway: Uncovering Drug Development and Regulatory Requirements

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Abstract: A 505(b)(2) application is a type of US New Drug Application (NDA) that allows the use of safety and efficacy data from one or more studies completed by another organisation or by researchers, even if the applicant does not have the right of reference. Existing drugs with a new therapeutic opportunity can use the 505(b)(2) pathway, which includes New Indication, New Route of Administration, New Dosage Form, New Formulation, New Drug Combination, and New Pro-drug Format. A 505(b)(2) applicant may rely on FDA's finding of safety and/or effectiveness for a reference listed drug (RLD) only to the extent that the proposed product in the 505(b)(2) application shares characteristics in common with the relied-upon listed drug. A 505(b)(2) application is one of the more advantageous methods of regulatory submission. This submission strategy can result in fast-track approval for a variety of goods, but only for those that demonstrate a little change from a medicine that has already received approval. This work focuses on types of FDA submission like: type 3-new dosage form; type 4-new combination; and type 5-new formulation or new manufacturer and discusses the significance of the 505 (b)(2) pathway, especially for generic companies that want to benefit from a development process that skips most non-clinical studies and acute safety and effectiveness testing.

Keywords: *Regulatory submission, New dosage form, New combination, New formulation, New manufacturer, RLD.*

PT/ST6/0029

Regulations for phytopharmaceuticals in India.

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Abstract: A novel class of drugs called phytopharmaceuticals requires a minimum of four different chemical markers and enriches fractions with at least one phytonutrient and one biomarker. The phrase "phytopharmaceutical" is a combination of the words "Phyto" (which denotes a plant) and "pharmaceutical" (which means medicinal drugs). The administration of AYUSH is responsible for overseeing Ayurveda Siddha and Unani medicine regulatory matters. This category offers a path ahead for the plant-based enhanced fraction, which is not mentioned in Ayurvedic literature, to be employed as a medication. The chemistry and quantity of the formulation's therapeutically active agents have been crucial to understanding. Botanical-based medicines are not appropriate under the regulations for synthetic pharmaceuticals. In light of this, AYUSH and CDSCO define and provide guidelines on the creation of phytopharmaceutical medications as the requirement of a science-based drug from botanicals of conventional medicine that has a long history but is inappropriately documented. The new phytopharmaceuticals rule authorizes the use of cutting-edge solvent extraction, fractionation, potentiating procedures, and current formulation development techniques in the evolution of drugs. The Central Drugs Standards Control Organization (CDSCO), which is overseeing laws governing the production, importation, and distribution of phytopharmaceutical drugs in India, has jurisdiction over the new category. This gazette announcement (Schedule Y, Appendix I B) provides regulatory standards for the reporting of scientific data on the safety, quality, and efficacy of phytopharmaceuticals. This article will discuss the current regulations for a novel class of drug i.e. Phytopharmaceuticals, and how they are controlled in India.

Keywords: *Phytopharmaceuticals, Current regulations, Guidelines, Regulatory provisions.*

PT/ST6/0032

Unique Device Identifier (UDI) For Medical Devices: Challenges For its Enforcement

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Abstract: The Unique Device Identifier (UDI) is portrayed as an alphanumeric or numeric code that is utilised in a uniform marking system that is unique to one kind and version of medical devices. A system for global tracking and labelling requirements for medical devices sold in various regions of the world was developed by the US Food and Drug Administration (FDA) through the regulatory requirement known as UDI. The UDI system's main regulatory objective is to promote patient safety. Adoption of a fully standardized system facilitates traceability, which is advantageous for all parties engaged in the medical device sector, such as producers, regulatory agencies, healthcare professionals, and patients. Here, various benefits of the UDI system are discussed, including enhanced device analysis, fewer medical errors, more precise reporting, the provision of a standard identification, and the establishment of a base. The primary concerns brought up by the implementation of the global UDI system are the focus of this study, along with UDI requirements such as the requirement that UDI information be printed in plain text and machine readable text on labels and packaging for single-use devices which is encoded in a linear barcode that is presented in a human readable format. Effective data management has proven to be one of the main challenges when adopting the UDI system. The next difficulty is also raised by the fact that different nations have differing implementation schedules for the UDI system.

KEYWORDS: *Unique Device Identifier, Medical Device, Implementation of UDI, Challenges*

PT/ST6/0033

Current Regulatory requirements to file the OTC drugs in Australia

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Abstract: The sale of OTC medicine can help in self-management of individuals. Australia has been acknowledged to be the world's third fastest-growing market in OTC sales. This article discusses on classification of new OTC medicine application, analysis of the requirements, labelling, stability, critical health information for the OTC drugs, the procedure involved in the registration and processing application and also information on selecting the application level for a particular medicine. There are two classes of drugs i.e., listed and registered. Under registered OTC, drugs are registered and certified under TGA and have AUST R number. There are 5 levels of classification i.e., N1-N5 based on the risk level. The procedure for registration of OTC medicine is initiated with an online application in TGA website and followed with the submission of dossier according to the required application, finally fees payment and approval of the application from TGA. In order to file the OTC medicine in Australia, it must follow the labelling as per TGO 90 (Therapeutic Goods Order 90), Stability data for OTC medicine as per the climatic zone III and IV, Selecting the application for a particular drug depends on the risk-based classification of application, umbrella branding and the safety concern. Thus, TGA has increased the flexibility of requirements, registration and filing of OTC application. Australia has defined criteria to determine the appropriate application level for a particular type of drug in Australia which helps to reduce the confusion of the applicant while selecting the level of application.

Keywords: *TGA, Umbrella branding, AUST-R, OTC medicine, risk-based classification*

PT/ST6/0034

Cognizance about banned drugs and drug abuse

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Abstract: Banned substances means those substances which are prohibited for the use of drugs or substances for the treatment. As they concern that they are causing harmful and severe effects to healthy human life. Drugs which are found unsafe in post marketing surveillance are banned by regulatory authorities. The drugs like anti diarrheal and cough preparations which are banned in other countries are blindly used in India as over the counter drugs because of unawareness, lack of law enforcement, and corruption. Non seriousness towards the health and lack of effective policies by government are the primary reasons for much delay in banning the drugs in India which leads to increase in disease burden and economic stress on Indian community. Unexpected adverse effects excess toxicity, unavailability of safer alternatives, harmful interactions, irrational use and failure of risk management options are the prime reasons which direct whether to use cautiously or ban a drug. The prime concern of manufacturers and health care professionals is to ensure quality drugs with minimum therapeutic benefit and minimum side effects.

Keywords: *Prohibition, Post Marketing Surveillance, Unawareness, Harmful Interactions, Health care*

PT/ST6/0036

Analysis of Commercially available Milk samples for the comparison of quality and to check the adulteration in milk in Manipal, Udupi

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Abstract: Milk has a high nutritional value in its natural state, providing nutrients such as proteins, fats, carbs, vitamins, and minerals in moderate levels and in an easily digestible form. Milk quality assurance necessitates a concerted effort from all major stakeholders along the dairy value chain. There were few tests conducted which are critical in determining the quality of the raw material and monitoring it along the value chain. Milk is easy to dilute and tamper with because it is made up of 87 percent water. Furthermore, because of its high nutritional content, germs can multiply quickly, especially in unsanitary environments. Adulteration is described as the deliberate lowering of the quality of food offered for sale, either by the addition or substitution of inferior components or the removal of a valued ingredient. The research was conducted in light of the recent concern about the adulteration of natural milk with various illegal chemicals in order to boost its marketability. The study's goal was to evaluate and validate the quality of milk of 4 commercially available milk samples namely: T1, T2, T3, T4. The quality analysis on the various samples procured was carried out using a standard milk adulteration kit manufactured by Jupitor glass works Pvt. Ltd, Gujarat, India for few and standard laboratory methods were followed for the remaining. When compared to T4, T1, T2 and T3, was found to be more adulterated.

Key words: *Milk, quality, analysis, adulteration*

PT/ST6/0037

Gateway To EU Market and Its Challenges

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Abstract: - The aim is to highlight drug filing and various EMA (European Medicines Agency) approval requirements for a drug in order to receive a marketing authorization in Europe, as well as their useful function in enhancing the EMA's standards. Numerous parts of the EU's regulation of the manufacture, distribution, and use of pharmaceuticals have been created and harmonised by European regulation. The methods and procedures for accessing one of the most prominent markets in the world are covered. EU establishes 4 different drug approval processes: Centralized Procedure, Decentralized Procedure, National Procedure, and Mutual Recognition Procedure. End to this we conclude protecting public health is the main goal of the regulations governing medical items in Europe. There are laws that mandate the development, testing, and manufacturing of pharmaceuticals in compliance with the standards in order to ensure their safety and the protection of patient's well-being.

Key words: - *EMA, centralised procedure, mutual recognition procedure, decentralised procedure, centralised procedure*

PT/ST6/0039

Process Preventive controls in Food Industry

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Abstract : The previous ten years have seen an upsurge in reports of foodborne outbreaks, putting consumers' health at risk. Food producers are mandated by FSMA to have preventative measures in place. Identification of preventative controls that would considerably reduce and prevent the identified reasonably foreseeable hazards is a component of a manufacturing site hazards investigation. Process preventative controls are those measures necessary at process phases that are crucial for the food's safety. Process preventive controls must be documented, including the parameters and any minimum or maximum values related to the control, as well as monitoring activities, corrective action plans, and confirmation that the process controls the danger. . The main goal of this research is to do a hazard analysis for the dietary component Co enzyme 10. risk that requires preventative measures. Given their importance for food safety, process preventative controls play a significant role in the production of goods. The three main elements that go into designing critical limits and operational limits for process preventative controls are validation, monitoring, and verification.

KEYWORDS :

FSMA, process preventive controls, critical limits, validation, monitoring

PT/ST6/0040

Methodology And Management Of Cleaning Validation In Pharmaceutical Industry

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Abstract: Cleaning validation is crucial to demonstrate and monitor all the critical process parameters. So, it is necessary to construct sufficient procedures for cleaning equipment in order to halt cross contamination. The purpose of current work was to perform cleaning validation on Norepinephrine bitartrate as per the production plan. The various aspects like cleaning methods, cleaning agents and its mechanisms were studied. Norepinephrine bitartrate was selected as the worst case molecule for execution of cleaning validation based on risk factors such as solubility, toxicity and potency. Analytical method validation for Norepinephrine bitartrate was developed by QC department employing reverse phase liquid chromatography with isocratic elution and UV detection.

Post development of analytical method validation, cleaning validation was performed for three executed batches including chemical and microbiological evaluation. Swab recovery fir SS plate was: Minimum 88.3%, Maximum 96.2%, swab recovery for glass plate was: Minimum 88.4%, Maximum 96.2%. Based on the review of results obtained for post cleaning sample of Norepinephrine bitartrate injection USP were well within the acceptance limit, hence it was concluded that the cleaning validation procedure was valid and same can be used in routine activity.

Keywords: *Cleaning Validation, Cross Contamination, Analytical Method Validation, Acceptance criteria.*

PT/ST6/0041

Comparison of Generic Drug Approval Process in Regulated and Semi Regulated Markets

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Abstract: Since generic medications share the identical active pharmaceutical components, dosage forms, strength, quality, indications, effects, directions, and dosage as brand-name medications, they can be used interchangeably. Generic medications are less expensive than brand name medications, since their development costs are lower. The application can be filled to the regulatory authorities to get generic drug approval. Since clinical trials can be skipped, evidence from bioavailability and bioequivalence studies is essential in the approval process for generic drugs. The goal of this study was to evaluate the legal framework for generic medication applications and the procedures for their approval in a number of nations, including the United States, Europe, Japan, Canada, Brazil, India, China, Singapore, and Saudi Arabia. This study mainly emphasizes on the application form, approval timelines and sequence of steps in the generic drug approval.

Keywords: *Generic drugs, Regulatory authority, Approval process, Bioequivalence, Bioavailability.*

PT/ST6/0042

REDUCED ANALYTICAL TESTING BRACKETING, MATRIXING, SKIP TESTING

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Abstract: Quality, safety and efficacy are the primary motto of pharmaceutical industry. Products manufactured were analyzed for all quality impacting parameters that they were with in standards. Analyzing all the test parameters for routine commercial batches and for all test points during stability was the resource management, time management constraints which is currently being faced by pharmaceutical industry, Bracketing matrixing and skip testing were the reduced analytical testing methods which was applied to the product and product quality was assured by the analysis of minimal number of samples and parameters at specific time periods which was a value addition to industry for the management of resource, time with quality management system. These reduced analytical testing methods were accepted by regulatory agencies.

Key words :

Bracketing, Matrixing, Skip testing. Quality, Parameters, Regulatory agencies

PT/ST6/0043

REDUCED ANALYTICAL TESTING BRACKETING, MATRIXING, SKIP TESTING.

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Abstact : Quality, safety and efficacy are the primary motto of pharmaceutical industry. Products manufactured were analysed for all quality impacting parameters that they were with in standards. Analysing all the test parameters for routine commercial batches and for all test points during Stability was the resourse management, time management constraints which is currently being faced by pharmaceutical industry. Bracketing, matrixing and skip testing were the reduced analytical testing methods which was applied to the product and product quality was assured by the analysis of minimal number of samples and parameters at specific time periods which was a value addition to industry for the management of resource, time with quality management system. These reduced analytical testing methods were accepted by regulatory agencies.

Key words:

Bracketing, Matrixing, Skip testing, Quality, Parameters, Regulatory agencies.

PT/ST6/0044

PROCESS VALIDATION OF DRY POWDER AND LIQUID PARENTERALS

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Abstract: This study was intended to demonstrate and standardize the data that should be routinely included in the marketing authorization dossier describing the evaluation or validation of the manufacturing process and distinguish them from those validation data which more properly fall under the remit of GMP Inspection. During the study the critical process ampoule were validated to demonstrate consistency of the manufacturing processes to produce the products of desired quality.The validation studies were conducted on 3 consecutive batches, which were intended for the use of commercial Purpose so this validation study is concurrent type. All the in-process variables and finished product characteristics were monitored, the statistical analysis of the data was carried out. Further from the results, it is inferred that the manufacturing processes of amoxicillin-potassium clavulanate 600 mg and Diclofenac sodium 25 mg 3 ml ampoule.

Key words:

Critical quality attributes, critical process parameters, concurrent validation, injection.

PT/ST6/0045

Process Validation of Hypolipidemic Agents

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Abstract : Process validation is defined as the evaluation and collection of data, starting from the process design stage up to commercial production, this establishes scientific evidence that a certain process is capable of repeatedly delivering quality product. Hypolipidemic drugs or lipid lowering drug are agents that lower the level of lipids and lipoproteins in the blood. Three batches of 150,000 tablets each of Hypolipidemic tablets were manufactured in the pilot plant according to the process design. The stages of manufacturing i.e, dispensing, granulation, lubrication, compression and packaging were performed according to the process validation protocol and process parameters. The compression of the tablets was done at variable speeds, ascending resistance to crushing, different levels of compression and different levels of powder in the hopper. The finished tablets from each batch was finally tested for identification, average mass, group mass, uniformity of mass, disintegration time, length, width, thickness, resistance to crushing, friability, dissolution, uniformity of dosage, assay, loss on drying, residual solvents, and BHA content. All the three batches showed 97.14% of yield by following the given process parameters and all the parameters complied with the specifications. Hence, it was concluded that the manufacturing process of hypolipidemic tablets was validated and the process parameters are within the acceptable range. These process parameters should be followed during the manufacturing of future batches.

KEY WORDS :

Process validation, Hypolipidemic drugs, Pilot plants

PT/ST6/0046

PROACTIVE RISK ASSESMENT FOR MANUFACTURING OF NEW ACTIVE PHARMACEUTICAL INGREDIENT IN A MULTI-PRODUCT FACILITY

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Abstract: Risk is a combination of the probability of occurrence of harm and the severity of that harm. According to the ICH Q9 Guideline, quality risk management is defined as a systemic process for assessing, controlling, communicating, and reviewing risks to the quality of a drug (medicinal) product throughout the product lifecycle. The objective of this study was to carry out a proactive risk assessment for manufacturing a new Active Pharmaceutical Ingredient (API) in a multi-product facility where other APIs are currently being manufactured and to bring the identified risks to an acceptable level. A proactive risk assessment is the detection of risks before they occur and devising strategies to minimize or mitigate them. In this study, a proactive risk assessment report has been prepared which identifies the risk activities that can have an impact on the Quality and Yield of the finished product (API) including the manufacturing facility, equipment, materials, chemicals, process, packing materials, documents, and personnel involved in the manufacturing process and to mitigate the identified risks using the industry's current control measures. The quantitative risk assessment was performed and the identified risks were found to be within acceptable level.

Keywords: Quality Risk Management (QRM), ICH Q9, proactive, risk assessment, API, Yield, Quality risk mitigation, hazards.

PT/ST6/0047

PERFORMANCE QUALIFICATION OF WALK-IN COLD ROOM

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Abstract: The aim of this thesis has been to mapping the temperature of a walk-in cold Room. This study's purpose was to ensure that the distribution temperature was uniform and met the acceptance criteria all through a walk-in Cold Room. An HVAC system maintained and regulated the temperature. Fourtech data loggers called temperature and humidity data loggers were used in the study. Fifteen data loggers have been used in fifteen critical locations are identified as mention in the sensor description and one is ambient temperature monitoring location outside the walk-in Cold Room. And they were placed in specific or pre-determined positions/locations in a walk-in Cold Room during the study activity. The temperature has been to be held between 2 and 8 degrees Celsius according to the protocol's acceptance criteria. This activity has a prospective qualification approach has been chosen to perform 48 hours temperature mapping cycle along with worst case studies has 25minute power failure studies and 25minute door open studies according to protocol and periodic temperature study shell be performed as per SOP: SOP-GMP-QA-001 titled temperature of area and equipment at walk-in Cold Room.

Keywords: *Validation, Temperature mapping, walk-in Cold Room, performance qualification.*

PT/ST6/0048

PERIODIC VALIDATION OF ALK-IN BODINCUBATOR

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Abstract: The aim of this thesis has been to mapping the temperature of a walk-in incubator. This study's purpose was to ensure that the distribution temperature was uniform and met the acceptance criteria all through a walk-in incubator. An HVAC system maintained and regulated the temperature. Fourtech data loggers called temperature and humidity data loggers were used in the study. Fifteen data loggers have been used in fifteen critical locations are identified as mention in the sensor description and one is ambient temperature monitoring location outside the walk-in incubator. And they were placed in specific or pre-determined positions/locations in a walk-in incubator during the study activity. The temperature has been to be held between 20 and 25 degrees Celsius according to the protocol's acceptance criteria. This activity has a prospective qualification approach has been chosen to perform 24 hours temperature mapping cycle along with worst case studies has 15minute power failure studies and 15minute door open studies according to protocol and periodic temperature study shell be performed as per SOP: SOP-GMP-QA-001 titled temperature and relative humidity of area and equipment at walk-in incubator.

Keywords: *Temperature mapping, walk-in incubator.*

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OR/ST1/002

Fabrication and optimization of Cancer Targeted Hybrid Solid Lipid Nanoparticles of Phytoconstituent for Treatment of Breast Cancer

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Abstract : To overcome multiple drawbacks and side effects associated with conventional and traditional chemotherapy to the vital organs and normal cells, targeted delivery was preferred. Active targeting is possible by conjugating nanocarrier with that targeting ligands such as amino acids resulting in an effective therapeutic strategy to treat cancers. Hybrid solid lipid nanoparticles (HSLN) were prepared by sonication and high-pressure homogenization using biocompatible and biodegradability lipids and polymers. Conjugation of amino acid with PLGA was performed using an amidation reaction and was used in the fabrication of HSLN using Compritol® 888 ATO as solid lipid. Another formulation was also prepared with unconjugated PLGA for comparison. The prepared HSLNs were characterized for morphological and physicochemical parameters and optimized using a central composite design. Optimized formulations will be evaluated for in vitro cytotoxicity study in time as well as concentration-dependent manner on human breast cancer MCF-7 cells by MTT assay. Further, cell uptake and flow cytometry studies will be carried out to confirm the qualitative uptake of developed nanoparticles by human breast cancer MCF-7 cells. Results of these studies are expected in few months. The results of conjugated and unconjugated HSLN are particle size was 234± 24 nm and 220 ± 33 nm. Zeta Potential −27.0 ± 0.05 mV and −20.5± 0.05 mV, Entrapment Efficiency 97 ± 2% and 88 ± 2%, Drug content 93.5% and 87.5%, In-vitro drug release 92.4% and 90.5% respectively. The proposed study highlights that amino acid conjugated PLGA HSLN could enhance the therapeutic response of nanomedicine for breast cancer treatment.

Keywords: Cancer targeted drug delivery, Hybrid nanoparticles, cytotoicity, human breast cancer, therapeutic response.

OR/ST1/006

Preparation and Evaluation of Nevirapine Solid Dosage Forms Using Solid Dispersion Technology

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Abstract : Slowly soluble drugs may not only be absorbed at a slow rate but also be incompletely absorbed or in some cases largely unabsorbed following oral administration due to the limitation of gastrointestinal residence time. The current study aimed to prepare and evaluate nevirapine solid dosage forms by employing solid dispersion technology using β-cyclodextrin by kneading method. A standard solution of nevirapine at a concentration of 1mg/mL was prepared by dissolving 50 mg of Nevirapine in 50 mL of 0.1 N HCl. The physical mixture of drug and carrier was triturated in a mortar with a small volume of methanol and water solution. The slurry was kneaded for 45 minutes and dried at 45°C. The dried mass was pulverized and sieved through 60 and the fraction was collected. The prepared powder was stored in a desiccator for further evaluation. The compatibility studies conducted by Fourier-transform infrared spectroscopy showed that the drug and carrier were found to be compatible. It was observed that the solid dispersion prepared using a 1:5 drug-polymer ratio by kneading method showed satisfactory in-vitro dissolution studies; average particle size (2µm), angle of repose (23°), bulk density (0.81 g/cc), compressibility (16%), and drug content (96%). The X-ray diffraction studies revealed that the pure drug in overall amorphous form with poor crystalline changed to amorphous form. Hence, it can be concluded that the solid dispersion complex of the drug was giving a better dissolution profile as compared to the pure drug. This, in turn, can reduce the dose of nevirapine, and improve bioavailability.

Keywords: Nevirapine, β-Cyclodextrin, solid dispersion, kneading method

OR/ST1/007

Formulation, Optmization and Evaluation of Nanoemulgel of Ketoconazole for Topical administration

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Abstract : Ketoconazole is used as a first line treatment for various types of cutaneous fungal infections like Malassezia, Candida, and Dermatophyte infections. Due to severe adverse effects caused by oral administration its use is restricted by oral route. Therefore, an alternative drug delivery approach through topical route is in focus but the drug being hydrophobic requires special formulation to penetrate the complex stratum corneum layer of the skin. In the current research work, nanoemulgel of the drug was formulated as it is one of the finest methods to achieve drug delivery of hydrophobic drugs by topical route. Incorporation of nanoemulsion into the gel base to form nanoemulgel improved the formulation rheological characteristics and the greaseless application. It also aided in the drug delivery selectively to a specific site improving efficacy of drug resulting in total dose reduction. In the current research work, formulation of nanoemulsion, characterization of nanoemulsion for particle size, zeta potential, and entrapment efficiency was done. Optimization of nanoemulsion was performed using full factorial design using Design-Expert® software version 9. Incorporation of the optimized formulation into gel base and the naoemulgel was evaluated for pH, viscosity, spreadability, drug content, and in vitro antifungal activity. In vivo pharmacodynamic evaluation of the optimized formulation was carried out on Wistar rats using Candida albicans as infectious organism. Based on the results of these studies, it can be concluded that nanoemulgel of ketoconazole for topical application was successfully formulated, optimized and evaluated.

Key words: Nanoemulgel, Topical drug delivery, Ketoconazole

OR/ST1/008

Development of sodium caseinate based curcumin transdermal microneedle patches for the management of obesity

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Abstract : Obesity and overweight lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides, and insulin resistance. To overcome this problem, the present study was conducted to develop a nano-emulsion-based polymeric microneedle patch for transdermal delivery of curcumin. The curcumin was extracted from Curcuma longa by the soxhlet extraction method. The extracted curcumin was formulated as nano-emulsion using clove oil, ethanol, PEG 400, and sodium caseinate to form nanoparticles. The nanoparticles were 100-250 nm in size with a zeta potential of -45 mV, confirmed by DLS. The size and spherical morphology were confirmed further by SEM and TEM analysis. With an encapsulation efficiency of 90 – 95%, X-ray diffraction analysis of nano-emulsion revealed 47% crystallinity and 51% amorphous properties. DSC profiles demonstrated endothermic peaks between 50 – 300 °C, and FTIR spectroscopy confirmed strong bonding in nano-emulsion. The bioavailability of curcumin in nanoformulation was higher compared to native curcumin in C57BL6 mice. In vitro and ex vivo release kinetics of MN patch was maximum at 180 sec. Microneedle transdermal patches were evaluated in a high-fat diet-induced C57BL6 mice model for transdermal delivery. Serum biochemistry and lipid profiles in curcumin-treated groups attenuated adipose tissue deposition in obese mice. Taken together, the transdermal delivery of curcumin via a microneedle patch will aid in converting white adipose to brown adipose tissue, specifically in those obese populations without the need for strenuous physical exercise and dietary restriction.

Keywords: Obesity, Nano-formulation, Microneedle patch, Curcumin, Transdermal drug delivery,

OR/ST1/009

Development and Characterization of Nano Delivery System Targeting β-amyloid Clearance in Alzheimer's disease

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Abstract : Alzheimer's disease (AD) pathogenesis is widely believed to be driven by the production and deposition of the β-amyloid peptide (Aβ). Currently available AD therapeutics is only symptomatic, targeting cholinergic and glutamatergic neurotransmissions and are given at high doses and have chances of high incidence of side effects while the Nanotechnology based drug delivery systems give promising safety and efficacy profiles which are to be proven by additional safety and efficacy data so as to gain support for clinical studies. Unfortunately, targeted drug delivery to the central nervous system (CNS), for the therapeutic advancement of neurodegenerative disorders such as Alzheimer's, is complicated by restrictive mechanisms imposed at the blood–brain barrier (BBB). Lipid-based nanoparticles (NPs) are an attractive mean for delivering drugs to cross BBB and being suitable vehicles for imaging probes. Hence we aim to achieve Targeting amyloid-β fibrillation using Solid lipid nanoparticles (SLNs) loaded with Aβ inhibitor Tramiprosate which was selected after docking analysis with 2BEG protein along with anti-glutaminergic drug Memantine Hydrochloride which is proposed to be a very vital target in the management of Alzheimer's disease. As per the cytotoxicity study the IC50 of MeHCL & TMPS was 30.28 & 9.89 respectively. When studied in combination they were found to be synergistic at the ratio of 1:3 which was used for further studies. The prepared nanoparticles were characterized for particle size, PDI, zeta potential, Drug release and TEM and were well within the limits. The pharmacokinetic study showed that the drug reaches brain and the pharmacodynamics study showed that the spatial memory was restored in $AlCl_3$ induced AD. The histopathological studies confirmed that the Aβ fibrils were reduced significantly in the hippocampal region in comparison to that of the disease induced animal. By these results we can confirm that the drug loaded SLNs would be utilized for the effective treatment of AD.

OR/ST1/0010

Formulation and evaluation of albumin nanoparticles containing amantadine hydrochloride

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Abstract : Parkinson's disease is a chronic progressive neurodegenerative disorder. It is characterized by the death of dopaminergic neurons in the substantia nigra and presence of intracellular protein. It affects approximately 5 million people worldwide. Amantadine, a member of the class of adamantanes, is used for treating Parkinson's disease. It is believed that it exhibits its activity by increasing dopamine concentration. The blood-brain barrier acts a barrier for the entry of drugs into the brain. The objective of the present study was to formulate and evaluate albumin nanoparticles containing amantadine hydrochloride. The amantadine hydrochloride loaded albumin nanoparticles were prepared by desolvation method. The prepared nanoparticles were further coated with polysorbate 80. The prepared nanoparticles were characterized for drug loading, particle size, zeta potential and surface morphology. The in vitro drug release was studied by using dialysis bag method using pH 7.4 phosphate buffer. The percentage of drug loading of prepared nanoparticles was 16.95 %w/w. The particle size analysis study showed that the mean particle size was 292 nm and the zeta potential was -4.1 mV. The polysorbate 80 coating slightly increased the particle size and reduced the surface charge. The SEM study showed that the particles were spherical in shape. The in vitro drug release studies showed that the particles were able to sustain the drug release for 24 h. Animal studies on male Wistar albino rats showed that nanoparticles coated with polysorbate 80 reduced locomotor symptoms when compared with uncoated nanoparticles and free drug.

Key words: Parkinson's disease, amantadine hydrochloride, albumin nanoparticles

OR/ST1/0011

Formulation and Evaluation of Nano particles of Salacia reticulata for Diabetes mellitus

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Abstract: Diabetes mellitus (DM) is a non-infectious endocrine disorder which is characterized by the disturbance in metabolism of carbohydrate and associated with hyperglycemia. It is linked with developing of various complications like micro vascular (nephropathy, retinopathy) and macro vascular (peripheral vascular disease and coronary heart diseases). Synthetic drugs used for treatment of diabetes are associated with various adverse effect such as sickness, vomiting, dysentery, alcohol flush, migraine, swelling, malignant anemia and faintness. Herbal drugs are proved to be a better choice over synthetic drugs because of less side effects and adverse effects. These drugs are used for life threatening disease, when chemical drugs are ineffective in treatment of disease with no toxic effects. The Extract of Salacia reticulate (SR) wight (Hypocrataceae) roots, stem and leaves have been used in Asia for hundred's of years for the folkloric treatment and other health issues. Incorporating herbal drugs into novel drug delivery systems help to increase the therapeutic value by reducing the repeated administration of the dosage form.it may help to decrease the side effects of herbal compounds. The aim of the present work is to Design and formulate nanoparticle based tablets of Salacia reticulate root and leaf for the treatment of diabetes mellitus and obesity , The objective of the present work is to design a nano particle based tablet formulation for oral administration. To perform the extraction of Salacia reticulate leaf and root using methanol and aqueous solvent system, to design and characterize Salacia reticulate nano particle. Nano technology is one such novel approach help to reducing toxicity and increasing the bioavailability. Extraction of Salacia reticulate root and leaf performed by soxhlet method using aqueous solvent and followed by silver nanoparticle formulation by extract preparation and synthesis of nanoparticles.

Keywords: Diabetes mellitus, Herbal drugs, Salacia reticulate, Nano particle, Extraction

OR/ST1/0012

Carbon dot-doxorubicin nanoconjugates as a pH-sensitive folate receptor-targeted drug delivery system.

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We synthesized Carbon Dots (CDs) in one step using a domestic microwave oven. Synthesized CDs are small and have excellent optical properties and biocompatibility. Folic acid was employed to provide CDs folate receptor targeting capabilities. CDs were characterized using different spectroscopic and microscopic approaches and coupled with Doxorubicin (Dox) for determining the drug release potential of CDs after drug conjugation. CDs-Dox conjugates are pH-sensitive and exhibit efficient drug release when monitored kinetically with fluorescence spectroscopy. Live-cell confocal fluorescence imaging is utilized to detect pH-responsive drug release and folate receptor-mediated cellular uptake. We think these biocompatible nanoconjugates can help to treat cancer.

OR/ST1/0013

Development and Evaluation of Oral Quick Dissolving Drug Delivery Systems of Aceclofenac

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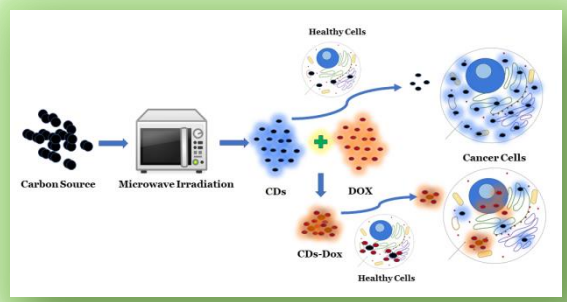

Abstract: India stands as one of three largest exporters in the world apart from South Korea & Greece of aceclofenac (Afen) drug, which is available in market in tablets, capsules, creams, ointments, gels, syrup and injectable dosage forms. It belongs to BCS class II drugs possess high permeability and low solubility, widely used in treatment of acute pain relieving. The aim of the present work is to prepare three different oral quick release formulations for aceclofenac (Afen) dissolving in saliva using different methods & excipients. A main objective of the study is to develop analytical method, selection of suitable excipients for formulation and conduct the compatibility studies with the drug and evaluate them. To prepare oral quick release formulations of Afen tablets, films and gels sublimation method, solvent casting method and solid dispersion by fusion method are selected respectively. total of 18 formulations were prepared and the optimized formulations tablets, films and gels with invitro drug release studies were found to be T6,F5,G4 with 96.47%,95.99% and 90.53% respectively. aceclofenac (Afen) oral quick release formulations tablets, films and gels were successfully developed by using different methods. Compatibility studies reveal that no physical and chemical interactions exist between drug and excipients. the present study has been satisfactorily attempted to formulate oral quick dissolving dosage forms for pediatric and geriatric patients to provide better pain relief.

Keywords: quick dissolving films, quick dissolving films, quick dissolving gels and saliva.

OR/ST1/0015

Formulation and Evaluation of Herbal Tooth Paste Prepared from the Bark of Juglans Regia Lin

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Abstract: The use of traditional medicine plants for the maintenance of good health has been widely observed due to effectiveness, easy availability low cost and devoid of side effects. The main purpose behind this project was to develop a stable and functionally effective tooth paste by excluding all types of synthetic additives, which are normally incorporated in such formulations. Botanical name of Juglan regia is Persian walnut and they belonging to the family Juglandaceae. The bark contains reducing sugars, alkaloid, tannins, phenols and saponins. Juglan regia bark is used as a toothbrush and as a dye for coloring the lips for makeup purpose. Walnut bark has been claimed to anti-inflammatory and blood purifies. It also has a major activity among cleaning the teeth. So we make toothpaste formulation using Juglan regia extract and other reagents. Evaluate the toothpaste as phytochemical screening, physicochemical properties, antibacterial assay, in vitro anti-inflammatory activity assay, moisture content, pH, viscosity, transparency, formability, drug content analysis, spreadability test and abrasiveness. In antibacterial assay micro-organism streptococci orange and anti-inflammatory activity assay standard drug acetyl salicylic acid were used. From this investigation we concluded that the formulated tooth paste by Juglan regia bark extract have all good characters of an ideal tooth paste when compared with marketed Meswak tooth paste when compared with all evaluation parameters. Results found stable and compatible for formulation of toothpaste with good antibacterial and anti-inflammatory property of Juglan regia bark.

Keywords: Juglan regia bark, extract, formulation

OR/ST1/0017

3D PRINTED BILAYER TABLET COMPRISING LEVODOPA AND AMANTADINE FOR PARKINSON DISEASE

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Abstract: Parkinson's disease is the second most common neurodegenerative disease in the world. It is characterised by a variety of motor and non-motor symptoms that requires individualised therapeutic approach. 3D printing technology is a novel chapter in pharmaceutical industry that has attracted a lot of attention recently since it offers substantial advantages over conventional pharmaceutical methods. It has been utilised to create tailored, personalised medicines that offer patients the most therapeutic benefits possible, bringing about a paradigm shift in the healthcare sector. The current study aimed to fabricate filaments containing levodopa and amantadine using hot melt extrusion (HME) coupled with the 3D printing to formulate bilayer tablet. Sustained release filament comprised of Amantadine, HPMC 2208 and lactose. Immediate release filament comprised of Levodopa, sodium starch glycolate and PVP K-30. 3D printed tablets were evaluated for various parameters like are dissolution, FTIR, weight uniformity, hardness, friability, DSC, TGA, SEM. Variations in drug loading, infilling density, and covering layers were made in order to optimise the in-vitro drug release rate. All the evaluation parameters showed satisfactory results. We found that the bilayer tablet showed the intended immediate and sustained release profiles based upon the active/excipients used. The work illustrated the potential application of 3D printed bilayer tablet in the personalized clinical treatment of parkinson disease as well as reducing the side effects associated with gold standard drug.

Keywords: Parkinson's disease, 3D printing, Bilayer Tablet, Hot melt extrusion, Combination therapy.

OR/ST1/0018

Formulation and evaluation of nanosponge loaded gel for topical delivery of Fluconazole

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Abstract : Fungus infections are still one of the biggest healthcare issues. According to reports, 20% to 25% of people have fungus infections on their skin. Fluconazole is a bis-triazole antifungal with unique pharmacokinetics. Fluconazole gives patients quick relief and gets rid of yeast in 50 to 90% of cases. The current study's goal was to prepare and assess a nanosponge loaded gel for the topical administration of fluconazole. Ethyl cellulose, cyclodextrin, and polyvinyl alcohol were used in various ratios to prepare difrent batches of nanosponges utilising the emulsion solvent diffusion process. The surface morphology, zeta potential, and particle size of developed nanosponges were evaluated. The prepared nanosponges were spherical in shape, with a particle size of 259.1 nm and a zeta potential of -0.2 mV. The in vitro release profile showed that the release was last up to 24 h. Then, fluconazole loaded nanosponge was mixed with Carbopol 940 gel to obtain nanosponge incorporated hydrogel. The prepared hydrogel had a uniform texture, a smooth consistency, and an excellent viscosity and spreading ability. Further in vitro testing of the gel revealed that 83.43% drug release after 24 h. The ex vivo permeation investigation showed a drug release of 74.71% for 24 h. The prepared gel showed better antifungal activity against Candida albicans in comparison with free fluconazole.

OR/ST1/0019

COMPARISON OF MARKETED TABLET AND 3D PRINTED TABLET OF LEVODOPA AND CARBIDOPA

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Abstract: Parkinson's disease is the second most common neurodegenerative disease in the world. It is characterised by a variety of motor and non-motor symptoms that requires individualised therapeutic approach. 3D printing technology is a new chapter in pharmaceutical manufacturing and has gained vast interest in the recent past as it offers significant advantages over traditional pharmaceutical processes. It has been used to design customized personalized medication to provide maximal therapeutic benefits for patients to establish a paradigm shift in the healthcare industry. The current study aimed to fabricate 3D printed tablet of Levodopa and Carbidopa and then compare it with the marketed tablet Sinamet. Three-dimensional (3D) extrusion-based printing was employed to print 3D printed tablet of levodopa and carbidopa. 3D printed tablets and marketed tablet Sinamet were evaluated for various parameters like are dissolution, FTIR, hardness, DSC, SEM. All the evaluation parameters when compared with sinamet showed slight better results. We found that the 3D printed tablet showed a better release profile. Therefore it can be concluded that if further studies are done on 3D printing it could lead to better personalized clinical treatment of parkinson disease as compared to the formulations currently available in the market.

Keywords: Parkinson's disease, 3D printing tablet, extrusion-based printing, Sinamet.

OR/ST1/0021

Preparation, characterization, and in vitro evaluation of polymer-assisting formulation of rosuvastatin calcium with bioenhancer based on solid dispersion technique

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ABSTRACT:

Hyperlipidemia is the condition of elevated bad cholesterol. Statins are mostly used but have poor solubility and limited bioavailability, so modification is needed to improve therapeutic efficacy and safty. In present work,co-precipitation appraoch is used for rosuvastatin PVP k 30 & eduragit L 100 polymer assisted solid dispersion with the addition of berberine as bioenhancer. The formulation was assessed for solubility, fourier transform infrared spectroscopy, differential scanning calorimetry, and in vitro dissolution study. 3^2factorial design was applied to study the effect of variables. Fourier transform infrared and differential scanning calorimetry study showed the significant peak shift of drug in SD. It indicated that the nature of the drug had been changed from crystalline form to amorphous form due to conversion into SD formulation. The dissolution rate, drug content and % yield were different for both polymers. The % drug release from a pure drug, berberine, physical mixture, and SD at 1 h observed with a ratio of 1:1:5 with PVP K 30 and Eduragit L 100 was 28 ± 1.26, 35 ± 0.56, 58.75± 0.28, 75.23±2.52 and 51.79 ±1.02, 72.91± 0.54. further, the batch was optimized by the RSM method. The solubility and dissolution profile of SD of RSV calcium with the incorporation of berberine showed enhancement of solubility and dissolution compared to pure drug and pure bioenhancer. It concluded that there is compatibility between the berberine and rosuvastatin which can further be investigated for the pharmacokinetic profile to get the additive effect of berberine as bioenhancer.

Keywords: Hyperlipidemia, statin, bioavailability, solid dispsersion, bioenhacers

OR/ST1/0022

Nano in situ Gels of Bevacizumab for the Management of Ocular angiogenesis: Molecular Docking Analysis and In vitro Evaluation of Anti-angiogenesis Activity

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Abstract: Bevacizumab is a humanized immunoglobulin IgG1 that exhibits excellent therapeutic efficacy in the management of ocular angiogenesis. Clinically intravitreal injections of bevacizumab are in practice to treat this condition. Due to a few drawbacks, the present investigation is aimed to develop nano in situ gels of bevacizumab to enhance convenience and compliance for patients suffering from ocular angiogenesis. The Glide module of Schrodinger software was used to perform the molecular docking studies. The double emulsion solvent evaporation method was used to design the nanoparticles followed by dispersion in a gel base. Anti-angiogenesis and irritancy potential was assessed by hen's egg test: chorioallantoic membrane (HET-CAM) assay. Mountains Map Premium 8 software was used to observe a 3D surface view of the CAM area, to study the fundamental parameters. Computational docking study results revealed that the bevacizumab had a well countable binding affinity with the residues of human serum albumin (-5.620) and vascular endothelial growth factor (-7.325). FT-IR spectroscopy results divulged there was no chemical interaction between the components. CAM assay disclosed that the prepared formulation was safe and reduced the angiogenesis in the CAM model. A significant anti-angiogenic effect was observed with all different concentrations of bevacizumab containing nano in situ gel formulations. The present findings improved our understanding of the events leading to the anti-angiogenic and non-irritancy potential of nano in situ gels of bevacizumab. Overall, these outcomes demonstrated that the application of the current approach in the treatment of ocular angiogenesis may be a potential platform for improved therapy.

Keywords: Bevacizumab, Blood vessel, HET-CAM assay, In situ gel, Ocular angiogenesis.

OR/ST1/0023

FORMULATION AND EVALUATION OF BLONANSERIN LOADED MICROEMULSION FOR INTRANASAL DELIVERY

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Abstract: Blonanserin is a new antidepressant medication that is used to treat schizophrenia and mania. It is available in tablet form, however due to significant first-pass metabolism, it has a low oral bioavailability (55%). Developing an intranasal Microemulsion improves solubility and dissolution, which helps to avoid this. Microemulsion have an advantage of better Solubilization and absorption of drug through mucosal membranes due to their lipophilic nature and smaller globule size. The main challenge is crossing the BBB; thus, the intranasal approach is effective for treatment. Based on solubility study Mixture of Capmul and Captex 200P had the highest Blonanserin solubilisation capacity oil while Tween 80 and Ethanol were selected as surfactant and co-surfactant respectively. Composition of the Microemulsion system was optimized using D-optimal mixture design in which concentrations of oil, surfactant mixture (surfactant + co-surfactant) and water were taken as independent variables while globule size, polydispersity index, zeta potential, viscosity and % drug diffused after 15 min. were taken as dependent variables. The optimized microemulsion formulation contained 160 mg/ml of Blonanserin, mixture of Capmul and Captex 200P (20% w/w), Tween 80 (30.53% w/w), Ethanol (10.17% w/w) and distilled water (39.30% w/w) had shown globule size (8.32 nm), globule size distribution (0.2547 PDI), high zeta potential (56.55 mV) and high initial in-vitro drug release. The optimized Blonanserin microemulsion has promising in-vitro drug diffusion and is devoid of toxicity. The Blonanserin microemulsion is a promising approach for the effective treatment of disease as it provides direct CNS targeting and reduces the dose

Keywords: Blonanserin, intranasal Microemulsion, Globule size, BBB.

OR/ST1/0024

DEVELOPMENT OF A SILK FIBROIN-ANASTROZOLE NANOPARTICLE LOADED IN SITU GELLING INJECTABLE FOR A SUSTAIN TREATMENT OF BREAST CANCER.

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Abstract:
There are multiple disadvantages to the various approaches used to prevent, cure, and treat breast cancer. A nanoparticle-based in situ gelling drug delivery technology has resulted in the development of vehicles to combat the undesirable effects. The aim of this study was to design and evaluate an in situ injectable formulation of anastrozole and silk fibroin nanoparticles for the treatment of breast cancer. Various evaluation parameters were applied to a the selected optimized formulation. Nanoparticles were in an acceptable size and dispersion range, as evidenced by entrapment efficiency, PDI, and particle size analyses. Drug and polymer, compatibility and thermal behaviour was validated by FT-IR and DSC tests for an improved formulation. The FE-SEM study of the lyophilized nanoparticles showed size consistency, longitudinal crystal structure, and a smooth surface. The octahedron structure of the nanoparticle was confirmed by HRTEM, and PXRD results showed that the drug was dispersed at the molecular level in the polymeric matrix and were crystallized. The sustained drug delivery properties of the nanoparticles with the requisite stability were supported by release studies. In situ injectable formulations of anastrozole and silk fibroin nanoparticles have been formulated, and their appearance, clarity, sol-gel transition, pH, rheological characteristics, syringability, drug release, and stability have been examined. The analysis findings suggested that this drug delivery system can suit patient and medical needs by controlling the release rate of biomolecules in a sustained, highly stable manner. Overall, these important advantages showed that the long-term treatment of breast cancer does not require new drug molecules; rather, innovative drug delivery technologies can be employed to successfully incorporate existing drugs into established treatment regimens.
Keywords: Anastrozole; silk fibroin; breast cancer; in situ gelling injectable; sustained release DDS.

OR/ST1/0026

Biotin-zein loaded Decitabine nanoparticles targeted for the management of glioma in C6-cell lines.

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Abstract : Glioma is the most prevalent malignancy complication with low prognostic rate for tumorigenic development in the neural compartment. Decitabine (DAC or 5'-aza-2'-deoxycytidine) is well explored hypomethylating agents. Decitabine is chemically a cytidine analogue attaches to the DNA fragment and hinder activity of e enzyme DNA methyltransferase (DNMT). In this study biotin-zein conjugated nanoparticles were designed to entrap Decitabine, formulating Decitabine loaded biotin-zein conjugated nanoparticle for the treatment of glioma under in-vitro analysis. The in vitro cytotoxicity of Decitabine-loaded nanoparticle has been measured on C6 -glioma cell line. Decitabine was entrapped within nanoparticles due to strong hydrophilic ion pairing with negatively charged Poloxamer 188. Results indicate that Decitabine entrapped biotin-zein nanoparticles attains its cytotoxic behaviour for glioma cell lines determined by cytotoxic assay; moreover, its uptake analysis through C6 glioma cell line, represented higher nanocarrier assemblance with confocal microscopic evaluation, was enhanced in biotin -zein conjugated nanoparticles after 6 h treatment. In summary, biotin-zein conjugated nanoparticles loaded with Decitabine promising targeted nano-vehicle for the delivery of Decitabine to the neural compartment for the management of glioblastoma.

Keywords: Biotin, Zein, Glioma, Decitabine, C6 glioma cell line.

OR/ST1/0027

Temperature Responsive PNIPAM-Based Nanogel System encapsulated with Anastrozole and activity study on MCF 7 Cell lines.

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Abstract: Thermo-responsive poly-N-isopropylacrylamide (PNIPAM) polymer has gained interest due to microenvironment targeting potential toward cancer cells. Its exceptional potential of the phase transition at body temperature (37°C) makes it biologically relevant for drug delivery and biosensing. The optimum drug loading and particle size with controlled release at a specific site are required for critical process parameters (CPP). The following study investigates the formulation and optimization of anastrozole (ANST)-loaded PNIPAM nanoparticles (NPs) prepared by solvent evaporation method for thermoresponsive drug delivery. To observe the effect of selected process parameters on quality attributes of product including particle size, zeta potential, and drug loading. Box-Behnken design (BBD) was implemented and the particle size was 110.5nm, PDI-0.175 and zeta potential 11.02 mV with drug loading of 8.35 %.The statistical data was found to fit in the quadratic model and p value is less than 0.005. The thermo-responsive behavior of .PNIPAM is evaluated on DLS and UV-Visible spectroscopy at elevated temperature to 60°C that has shown an increase in turbidity as well as aggregation of the nanoparticles. The TEM and AFM revealed the spherical and smooth surface of ANST-PNIPAM NPs. The formulation exhibited the controlled release of ANST for 48 h at pH 7.4 and triggered release at simulated tumor microenvironment at pH 5.0. The in vitro cytotoxicity of the formulation is higher than free ANST and exhibits dose-dependent cell viability. The higher cell uptake was observed by NPs after 12-h incubation in MCF-7 cell lines using confocal microscopy. Apoptotic evaluation of ANST-PNIPAM NPs showed 22.67% in comparison to free ANST where 6% was analyzed on the flow cytometer.

Keywords: Breast cancer, Anastrazole, MCF 7 cell lines, PNIPAM

OR/ST1/0028

Intranasal delivery of Memantine loaded nano lipidic carriers

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Abstract :Intranasal (IN) route is an alternative route proposed for direct delivery to the brain. Among the drug therapeutic alternatives, Memantine along with Donepezil is considered to be the best therapy used for management of Alzheimer's disease. In this investigation, memantine a prominent NMDA receptor antagonist was loaded in egg lecithin. The preparation of memantine loaded lipidic carriers was done employing thin film hydration technique and which was further stabilized by Tween 80 as a stabilizer. The resulting mean particle, zeta potential, PDI, of nanolipid carriers were found to be 101.4±0.62 nm, -35.7±0.25 mV, and 0.222 respectively. The liposomal formulation was found to be stable for 3 months at 4°, 25°, and 40°C with no change in size, PDI and zeta potential. Morphology studies suggested spherical shape and size near 150 nm. Entrapment efficiency and drug loading of liposomes were found to be 13.58% and 78.35%. Ex-vivo nasal ciliotoxicity studies on goat mucosa illustrate that prepared liposome were safe for IN route. Ex vivo studies i.e., permeation and toxicity investigation confirmed the superiority of fabricated liposomes. Fabricated memantine-loaded liposomes seem to be a potential approach for nose to brain delivery and contributes an important therapeutic candidature for futuristic pre-clinical Alzheimer's treatment and management.

Keywords:- Memantine, Intranasal delivery, Liposomes, Alzheimer's Diseases

OR/ST1/0029

Gastroretentive Lipid Based Catechin Loaded Pellets for Bioavailability Enhancement: In-Vitro and In-Vivo Assessments

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Abstract Catechins are the primary natural flavonoids that possess potential therapeutic benefits including antioxidant, anti-angiogenic, anti-tumor, anti-obesity, and anti-inflammatory having poor bio-availability limiting their clinical use. The poor bio-availability is attributed to its lower solubility and poor absorption in the intestine due to active efflux by P-Glycoprotein. The objective of the present investigation was to design and optimize lipid based floating multiparticulate of catechin, to increase its solubility, and to reduce P-Glycoprotein mediated efflux in the intestine hence improving oral bioavailability. Hydrophilic carriers Gelucire 44/14 and Gelucire 55/18 were used in different ratios to prepare solid dispersions. The resulting catechin solid dispersion was then transformed into sustain release gastroretentive floating pellets employing sodium bicarbonate and ethyl cellulose as gas former and matrix polymer, respectively, along with hydrophobic lipid carrier compritol 888 ATO as release retardant. Using a 3-level, 2-factor, factorial design, the effect of the amounts of compritol 888 ATO and sodium bicarbonate: ethyl cellulose were investigated. The aqueous solubility of catechin solid dispersion compared to the pure drug revealed a 5 fold improvement. The optimum system demonstrated 89.64±1.25% drug release in 8 hours and could float for longer than 8 hours. The relative bioavailability of the optimized formulation was 2.5 fold higher than that of the commercial tablet, according to a pharmacokinetic study done on male Wistar rats. The outcome of the current study indicated that lipid based floating pellets would be a great alternative for delivering catechin with increased bioavailability and efficiency in a range of clinical applications.

Keywords: Catechin, gelucire, compritol 888 ATO, solid dispersion, lipid floating pellets.

OR/ST1/0030

Assessment of solid-state behaviour and in vitro release of Artemether from liquisolid compacts using mesoporous materials as an excipient.

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Abstract Artemether is a potent antimalarial drug used in the first-line treatment of multi-drug resistant malaria. It belongs to BCS II, exist in different polymorphic forms, and exhibits incomplete absorption and low oral bioavailability due to poor dissolution. The present study evaluates the effect of different mesoporous materials in the liquisolid compact for the enhancement of dissolution of the drug, and polymorphic stability. Liquisolid compacts were prepared using tween 80 as a non-volatile solvent, microcrystalline cellulose as the carrier, and Syloid 244FP and Syloid XDP as coating materials at different coating and carrier ratios. Eight such formulations were prepared. The formulated liquisolid compact was assessed for precompression parameters, followed by compression into tablets by direct compression method. The prepared tablets were evaluated for hardness, friability, wetting time, % water absorbed, and in-vitro dissolution studies. Physicochemical characterization was done to study the drug excipient interaction, thermal behaviour, and surface characteristics. The study revealed that an increasing quantity of mesoporous material exhibited a better dissolution profile compared to the pure drug. Good compressibility and tabletability were observed at a carrier: coating =1:5. FTIR studies confirmed no interaction between drug and excipients. Noteworthy findings of PXRD and DSC suggested the presence of artemether in metastable β form in the formulation. Syloid XDP was found to be more effective in enhancing the drug release compared to Syloid 244FP. Hence, the use of mesoporous silicas at a suitable excipient ratio could be a promising strategy for improving the dissolution of poorly water-soluble drugs.

Keywords: Artemether, liquisolid compact, solid-state behaviour, dissolution, mesoporous silica.

OR/ST1/0031

Targeted delivery of anthracenedione derived compound M loaded lipid polymer hybrid nanoparticles against MDA-MB 231 cell line to treat triple-negative breast cancer

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Abstract

The type of breast cancer known as triple-negative breast cancer (TNBC) lacks all of the receptors characterised in breast cancer. TNBC covers around 10-15% of all the type of breast cancer and is of particular research reveals treatment difficulties due to poor prognosis and highly invasive nature. Nanotechnology provides an advanced platform for TNBC treatment by developing novel nanocarrier systems loaded with chemotherapeutic agents and these agents are the potential to target at the tumor site. The liposomes and polymeric nanoparticles combine to form lipid-polymer hybrid nanoparticles (LPHNPs) are the next-generation core-shell nanostructures in which a polymer core is encased by a lipid layer. The anthracycline class of compound M is an antibiotic and antineoplastic agent with a low incidence of drug resistance. Though the selected drug candidate has marked anticancer potency however its major drawback is poor biocompatibility, low stability due to its high hydrophilic character that can be overcome by lipophilic delivery systems like LPHNPs. The goal of the current work was to develop Lipid Polymer Hybrid Nanoparticles (LPHNPs) using the one-step nanoprecipitation method which been loaded with compound M. The optimization of LPHNPs loaded with compound M was analysed by Box Behnken design (BBB) 3^3 by varying the concentration of lipid and polymer. The characteristics of LPHNPs such as particle size were 58.66 nm, Polydispersity Index (PDI) was 0.179, and Zeta potential was -20.35mV. *In-vitro* drug release of LPHNPs loaded Compound M was found to be 60.4% at 72 hrs. *In-vitro* cell viability test of the optimized LPHNP formulation and pure compound M was performed in the MDA-MB231 cell line and the IC50was found to be 44.014 and 40.283. The stability study suggests that nanoformulation is stable at 4°C. The prepared LPHNP-loaded compound M for controlled release and for site-specific drug delivery system.

Keywords Triple-negative breast cancer (TNBC), Lipid Polymer Hybrid Nanoparticles, Polydispersity Index (PDI), Entrapment efficiency, Cytotoxicity.

OR/ST1/0033

OPTIMIZATION, FORMULATION AND *IN-VITRO* EVALUATION OF SUSTAINED RELEASE TABLETS OF SUMATRIPTAN SUCCINATE

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Abstract

Sumatriptan Succinate is an Anti-migraine agent which acts as 5-HT receptors agonist. The objective of the present study is to determine the release of Sumatriptan succinate sustained release tablets. The FT-IR study indicated that there is no interaction between the drug and polymer. The tablets were prepared by wet granulation technique using different polymers such as HPMC, Ethyl cellulose and Eudragit RSPO in various concentrations. The prepared sustained release tablets were evaluated for thickness, hardness, friability, drug content, *in-vitro* drug release, kinetic studies and stability studies. From the release studies, the optimized formulation F10 shows better release rate when compared to others. The drug release kinetic data confirmed that all the formulation fit into Higuchi model which shows the R^2 value of 0.974 to 0.994. The results of in-vitro release data were fitted to the Korsmeyer Peppa's equation to analyse the release pattern of the drug from polymeric system. The 'n' value was found to be 0.404 to 0.444, indicating the drug release follows Fickian release mechanism.

Keywords: *Sumatriptan Succinate, Anti-migraine, 5-HT receptors agonist, Optimization, Eudragit.*

OR/ST1/0035

FORMULATION AND EVALUATION OF TRIPHALA DENTURE CLEANSING PASTE

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Abstract: The goal of this study is to create and assess a Triphala denture cleaning paste with minimal abrasive properties that effectively eliminates plaque by working against Streptococcus mutans and Candida albicans. The paste was made using the dry gum method and ingredients including glycerin, clove oil, badam gum, sodium CMC, low-abrasive grade hydrated silica, thickening grade hydrated silica, aqueous Triphala extract, coco glucoside, sodium methyl cocoyl taurate, cocamide propyl betaine, and coco glucoside. There were no chemical interactions between the medication and the excipients utilized, according to DSC and FTIR analyses. It was discovered that formulation F6 demonstrated good cleaning properties when the aforementioned chemicals were mixed in varied proportions. Subsequent stability experiments were carried out for the improved formulation. To conclude, Triphala denture cleaning paste has effective cleaning properties and good anti-fungal properties against Candia Albicans. Future patients who wear dentures often may switch to this improved version of Triphala denture cleaning paste since it is more affordable than other chemical formulations now on the market.

KEYWORDS: Denture cleansing paste; Triphala; Anti-bacterial activity; Anti-fungal.

OR/ST1/0036

DESIGNING A NOVEL ALKALINE ANTIFUNGAL *IN SITU* FORMULATION AND ITS CHARACTERIZATION

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ABSTRACT Objective: Luliconazole is the broad-spectrum topical antifungal agent that acts by altering the synthesis of fungi cell membranes. The literature suggests that the recurrence of fungal infection can be avoided by altering the pH of the area. The studies also suggest that the fungi thrive by altering the skin pH to slightly acidic i.e. pH 3-5. Hence the current study is aimed to formulate an alkaline pH-based antifungal spray solution. Materials and Methods: Luliconazole was used as an anti-fungal agent and alkaline spray was formulated for topical application using Eudragit RS-100, PEG-400, water, sodium bicarbonate, and ethanol. The polymeric solution was prepared by using solubilization method. Sodium bicarbonate was used as an alkalizing agent.Results: Based on DSC and FTIR Drug (luliconazole) and polymer (Eudragit RS-100) were compatible. F-14 formulation was optimized using the design of experiment among all prepared formulations. *In vitro* drug diffusion studies and antifungal trials against *Candida albicans*, found 98.03% drug diffusion and the zone of inhibition measured was 9mm , respectively.Conclusion: The findings of the optimized Luliconazole alkaline spray formulation were satisfactory, compatible with human skin, and sustained drug release improvement in antifungal treatment.

Keywords: *In situ film, Alkaline, In vitro antifungal activity, Luliconazole, Candida Albicans*

OR/ST1/0037

A NOVEL POLYMERIC FILM FORMING SPRAY APPROACH OF EUPATORIUM GLANDULOSUM MICHX FOR WOUND HEALING

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ABSTRACT Wound healing is a complex and fragile process as it is susceptible to interruption or failure leading to the formation of non-healing chronic wounds. The present research work aims to formulate and evaluate Eupatorium glandulosumMichx-based topical polymeric film spray for wound healing activity. The formulation is designed to form a transparent thin and water-insoluble film on drying that can treat wounds of any shape and size and avoid any other form of a wound dressing. The wound healing polymeric film spray was formulated using the methanolic extract of the Eupatorium glandulosum Michx and various polymers. MethodologyPhase 1 Extraction: The extraction process is carried out by using the Soxhlet extraction apparatus. Characterized for their physicochemical constants. The methanolic extract was prepared by maceration method and the extract was formulated into the topical polymeric solution for spray. The results of preliminary phytochemical investigation showed the presence of carbohydrates, cardiac glycosides, phenols and flavonoids. Quantitative analysis of polyphenolic compounds showed high content of flavonoids. Phase 2: Formulation by DOE: The formulation is optimized by using the DOE by BoxBehnken method. Thereby extract is mixed according to optimized concentrations obtained, thereby the characterization is carried out for the formulation. Phase 3: Characterization: Parameters such as Drying time(2.50min), pH(6.8), Viscosity(16.5), and Thickness(0.20) were found to be satisfactory. The antimicrobial activity of optimized formulation was found to be effective in both gram-positive and gram-negative organisms. Invitro and Ex-vivo studies are done, where the optimized formulation promotes better wound healing in comparison to that of the marketed product.

Keywords: *Eupatorium glandulosum Michx, Wound Healing, Polymeric film spray*

OR/ST1/0038

FORMULATION AND EVALUATION OF POLYMERIC MICELLES OF LIPID LOWERING AGENT

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ABSTRACT : The current study aimed to develop and evaluate polymeric micelles containing Simvastatin, an antilipidemic agent by Co-Solvent technique. Compatibility between the drug and excipients were determined by FTIR and DSC. The Co-Solvent evaporation technique was used to synthesize polymeric micelles. The optimized formulations of the PMs were obtained from Historical data methodology. The concentration of simvastatin and poloxamer were chosen as an individualistic factor, particle size, drug loading as well as encapsulation efficiency were chosen as dependent factors. The size and surface morphology of the polymeric micelles was studied using SEM. The selected excipient for micelle formulation was compatible with the drug. Historical data design suggested that the optimum amounts of 5mg Simvastatin and 60mg poloxamer resulted in the formulation with 76.84nm of particle size, drug loading capacity of 21.77% and 93.60% encapsulation efficacy. After 12 hours, the cumulative percentage drug release from the optimized formulation (Y7) was 97.94%. The optimised formulation (Y7) was stable for 45 days in a stability analysis. It can be inferred that Simvastatin Polymeric micelles formulation has significant prolong release of the drug up to 12h. Drug was successfully formulated into sustained-release Polymeric micelles by Co-Solvent evaporation technique.

Keywords: *Simvastatin, Micelles, Antilipidemic agent, In vitro drug release profile, Cholesterol.*

OR/ST1/0039

ADDRESSING NEUTROPENIA ASSOCIATED WITH TAXANE DERIVATIVES FOR ANTI-CANCER THERAPY

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Abstract: Taxanes are crucial chemotherapeutic drugs with demonstrated effectiveness in treating human malignancies. They prevent mitosis at the metaphase/anaphase transition, resulting in cell death, by increasing tubulin assembly and stabilizing microtubules. The drug's safety was examined in several clinical investigations, and it was discovered that neutropenia and its consequences were the most common reason for treatment-related death. Granulocyte colony-stimulating factor (G-CSF) may be used prophylactically to treat neutropenia. G-CSF prophylaxis across all chemotherapy cycles with prophylaxis just during the first two cycles in breast cancer patients who were at increased risk of febrile neutropenia was compared in randomized research. The outcome was a decrease in neutropenia episodes. Recombinant G-CSF conjugated to mono-methoxy polyethylene glycol (pegfilgrastim) is employed. Trilaciclib, Plinabulin, F-627, and Eflapegrastim are also employed for the prevention and treatment of neutropenia. Plinabulin (a pharmaceutically effective salt) demonstrated reduced bone pain, a lower frequency of hospitalizations, and a lower frequency of grade 4 neutropenia. Better formulations are made possible by the taxane prodrug liposome's approach that significantly increased water solubility of taxane. Neutropenia is also decreased by flexible emulsions of taxane derivatives made with phospholipids, polyethylene glycol derivatives, and osmotic pressure regulators. Linoleic acid and oleic acid when conjugated with taxane derivatives exhibit a higher safety index. As an antibacterial and antifungal prophylactic, an oral fluoroquinolone combined with amoxicillin/clavulanate (or clindamycin if penicillin allergy exists) is advised. In conjunction with chemotherapy regimens, these studies clarify the function of these novel medications as the new standard of treatment for taxane-associated neutropenia in solid tumors.

Keywords: *Taxanes, G-CSF, Chemotherapy-induced Neutropenia, Plinabulin, Tumors*

OR/ST1/0040

ACITRETIN-LOADED NANOVESICULAR GEL FOR TOPICAL TREATMENT OF PSORIASIS: DESIGN, CHARACTERIZATION, *IN VITRO* AND *IN VIVO* EVALUATION

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Abstract Acitretin (ACT) is a second-generation retinoid used in the treatment of severe psoriasis. However, its oral administration is limited due to extremely low aqueous solubility, high photosensitivity, and systemic side effects. The objective of the present study is to develop, optimize and characterize a nanovesicular gel consisting of Acitretin-loaded ethosomes (ACT-ETH) and evaluate its potential in a psoriatic animal model. The acitretin-loaded ethosomes were prepared by a thin-film hydration method and evaluated for vesicle size, zeta potential (ZP), entrapment efficiency (EE), and skin penetration ability. The optimized ethosomal formulation was incorporated into carbopol gel and characterized for its skin deposition potential, *in vitro* cytotoxicity, skin irritation potential, and anti-psoriatic activity. The optimized ethosomal formulation has an average vesicle size of 189 nm, ZP of -11.5 mV, and entrapment efficiency of 93.70 ± 0.89%. Fluorescence microscopy studies showed the better penetration of ethosomes into the deeper skin layers. The ex-vivo skin permeation studies confirmed the significant enhancement in skin deposition of ACT by ACT-ETH gel in comparison to that of plain gel. An *in vitro* cytotoxicity study revealed that ACT-ETH gel considerably decreased the cytotoxicity of ACT towards normal cells (L-929) compared to plain ACT gel. The *in vivo* anti-psoriatic study confirmed the significant improvement in the therapeutic response with ACT-ETH gel for the topical treatment of psoriasis. The present study concludes that ACT-ETH gel demonstrated better anti-psoriatic activity by overcoming the inherent drawbacks associated with the drug by enhancing its topical delivery in the treatment of psoriasis.

Keywords: *Acitretin, nanoethosomal gel, psoriasis, in vitro cytotoxicity, anti-psoriatic activity.*

OR/ST1/0041

FORMULATION AND EVALUATION OF *CURCUMA AMADA* ANTI-RHEUMATOID CONTENT CONFIRMED MY IN-SILICO MOLECULAR DOCKING TECHNIQUE

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Abstract Rheumatoid Arthritis is an autoimmune disease that progresses over time. The annual incidence of new cases is roughly 5-50 cases per lakh, while the incidence of RA is about 0.5-1 percent in the population. Because RA primarily affects the elderly, it has a negative impact on patients' quality of life. Generally, RA is treated with NSAIDS, which have long-term side effects that harm other parts of the body. As curcumin is a herbal medicine with no side effect on the body as people nowadays moving towards the herbal formulation. Main aim of the project is to increase the extraction of curcumin by giving the folk remedie treatment to the rhizomes of *curcuma amada* and the extraction of curcumin was done by microwave assisted extraction which is a part of green chemistry and to check the activity of curcumin and other curcuminoids present in the extract with the protein PAD4 by molecular docking technique. Protein arginine deiminases (PADs), a set of key enzymes to trigger autoimmune response necessary for the development of rheumatoid arthritis, can be targeted for the treatment of rheumatoid arthritis so, the PAD4 was used for the molecular docking purpose with the curcuminoids and docking score obtained was also preferable.by checking this activity by this software we and determine the activity of the curcuminoids and the protein which minimizes the time and efficiency of the work. the further animal activity of the formulation to check the bioavailability of the formulation is pending.

Keywords: *Rheumatoid arthritis, molecular docking PAD4, bioavailability, curcuma amada, curcuminoid.*

OR/ST1/0042

EXPLORING POTENTIAL OF A VETERINARY ANTIBIOTIC AGAINST TNBC.

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Abstract Cancer is one of the leading causes of death worldwide. As per study using cancer cell lines, the anti-coccidial drug Salinomycin, has shown anti-cancer effects and ability to combat multi drug resistance.It is a polyether ionophore antibiotic isolated from *Streptomyces albus* It kills CSCs mostly by interfering with ABC drug transporters, the Wnt/β-catenin signaling pathway, by decline of mitochondrial membrane potential and induces apoptosis. Many studies conducted in vitro and in vivo using Sal-loaded nanocarriers showed increased therapeutic efficacy. There aren't many studies on liposomal Sal currently.Polymeric nanoparticles are more stable than liposomes. Additionally, nanomicelles favour accumulation at tumour sites due to their small size. A patent for the use of sal in preparing medicament for resisting various human malignant tumors was filed. Sal can regress cancers that have received treatment and are resistant to it, especially when combined with new drugs to target the tumour. Sal and 5-FU together had a synergistic antitumor effect. The only clinical cases of sal application are documented by Naujokat et al. in Germany. Sal-loaded nanoparticles have not been subjected for any clinical trials. Due to the nanosystems' poor targeting capabilities, as only a small portion of the administered dose actually reaches the tumour site. Sal can be considered of as a triple-edged sword against cancer due to its ability to kill CSCs, regular tumour cells, and highly indolent tumour cells that exhibit resistance to cytotoxic drugs, radiation, and induction of apoptosis. Research is needed to be done on the formulations for clinical use.

Keywords: *Cancer stem cells (CSC), anticoccidial, Nano formulations, antitumor.*

OR/ST1/0043

DEVELOPMENT AND EVALUATION OF LIPOSOMAL DRUG DELIVERY SYSTEM OF LAPATINIB FOR ENHANCED ANTICANCER ACTIVITY IN BREAST CANCER TREATMENT

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Abstract Liposomes are bilayer vesicles of phospholipids, exhibits biocompatibility, low immunogenicity, enhancement of half-life, safety and efficacy. Lapatinib, is a BCS class II drug approved for advanced and metastatic breast cancer treatment, and in the management of triple negative breast cancer. It selectively targets and binds to the intracellular tyrosine kinase domains of HER2 and EGFR receptors. Due to restricted dissolution leads to low oral bioavailability and limited clinical usage that warrants development of new delivery system to overcome above mentioned limitations for administration through non-oral route. In present study, Lapatinib loaded liposome were developed to enhance the anticancer activity. Characterization were done for particle size, zeta potential, surface morphology by HRTEM. Lapatinib loaded non crystalline structure of liposome was determined by DSC. *In-vitro* MTT assay was performed MDAMB, 4T1 and MCF7 cancer cell lines and VERO normal healthy cell line. Lapatinib liposome was effectively uptaken by all three breast cancer cell lines in concentration dependent manner superior than lapatinib. Flow cytometric analysis demonstrated the enhanced apoptotic potential of Lapatinib in liposome. The antitumour activity was evaluated in xenograft induced by 4T1 murine mammary carcinoma breast cancer model. Lapatinib liposome significantly reduced the tumor burden of cancerous tissue and effectively controlled the tumor cell proliferation. In toxicity studies, lapatinib liposome displayed the half lethal dose of 100mg/Kg. The results of the present study demonstrated better in vivo performance of Lapatinib liposomal formulation, appears to be a promising carrier for delivery of Lapatinib in the treatment of breast cancer.

Keywords: *Lapatinib, breast cancer, apoptosis, liposome, drug delivery*

OR/ST1/0044

CURRENT STATUS OF 1,4-NAPHTHOQUINONES ANALOGUE FOR CANCER THERAPY

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Abstract Numerous 1,4-naphthoquinones have been isolated from natural resources over the past few decades, and a number of their derivatives have been produced using a variety of structural designs. These compounds have a wide range of biochemical properties and regulate a number of pharmacological activities, making them promising new targets for overcoming the difficulties associated with the development of novel drugs. Naphthoquinones, and other aromatic chemicals can be used to synthesise ortho-naphthoquinone, which was first isolated from the heartwood of Handroanthus impetiginosus. The effects of 1.4-naphthoquinones on topoisomerase I inhibition and induction of NAD(P)H: quinone oxidoreductase 1 are well documented. This organic substance has demonstrated action against a number of malignant tumour forms. This also exhibits antifungal and antibacterial properties.This derivative, complexed with a pharmaceutically acceptable solubilizing carrier molecule. The complex may be freeze-dried and is considerably soluble when reconstituted in aqueous solution. Emulsions of it in a pharmaceutically acceptable fat emulsion vehicle are also provided .Low toxicity is displayed by ortho-naphthoquinone, which shows no toxicity toward alveolar macrophages, cutaneous fibroblast cells, hepatocytes, or kidney cells. Phase II clinical studies are now being carried out to treat pancreatic cancer, melanoma and other diseases with 1,4-napthoquinones . The compound is also used for the invention of vaccine, and belongs to the technical field of immunology, it is also used for improvement of sleep or for removing disorders and for formulating gastroretentive swelling tablets, novelty has been filed for all of these.

Keyword: quinone derivatives, structural modification, naphthoquinones, Bigoniaceae, Handroanthus impetiginos

OR/ST1/0046

FORMULATION AND EVALUATION OF CYCLOSPORINE BASED SOLID MICRONEEDLE DRUG DELIVERY FOR PSORIASIS

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ABSTRACT Psoriasis is a gene and immune-mediated inflammatory skin disease & its treatment is completely dependent on symptom control. Hypodermic-needles, topical creams, along with transdermal patches have been used frequently for transdermal administration of medications. The microneedle enhances the transport of drug directly into the skin by bypassing the stratum corneum (skin layer) to solve different problems concerning the above transdermal delivery systems. The research work was carried out based on poke and patch approach, in this approach solid microneedles are poked in the stratum corneum of skin and the cyclosporine drug loaded transdermal patch is applied on the poked skin surface. The evaluation parameters of patch include compatibility studies like FT-IR and DSC studies followed by optimization of the transdermal patch using DoE software was carried. Folding endurance, thickness, % moisture content, weight variation, % moisture uptake and drug content uniformity of the patches are some of the physicochemical parameters being evaluated. The in-vitro drug release studies for prepared cyclosporine drug loaded transdermal patch by using Franz diffusion cell was carried and graph was drawn. The marketed product of solid microneedle fabricated by titanium metal of needle size 0.25mm was used for the research.

Keywords: *Solid microneedles (SMNs), Franz diffusion cell, transdermal delivery system, titanium metal, cyclosporine, transdermal patches*

OR/ST1/0047

FABRICATION AND EVALUATION OF NERATINIB LOADED MULTIWALLED CARBON NANOTUBES FOR CANCER MANAGEMENT

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Abstract Cancer is a condition marked by unchecked cellular proliferation that has a high potential to spread to other body organs. In this study, the incorporation of Neratinib into the carboxylic acid functionalized multiwalled carbon nanotubes helps in the carrier-mediated movement of the drug into the target site. Moreover, the coating of Biotin and Chitosan provides dual targeting of the formulation leading to reduced adverse effects of the drug on the peripheral organs. Multiwalled Carbon Nanotubes have been extensively examined to investigate different approaches of application in cancer treatment. The Neratinib-loaded multiwalled carbon nanotubes were formulated and evaluated for different pre-formulation and post-formulation factors such as solubility studies, compatibility studies FTIR, DSC, XRD, SEM, H-NMR, UV-VIS Spectroscopy, drug encapsulation efficiency, In vitro drug release. Upon further evaluation, it was confirmed that the polymers used do not significantly alter the chemical structure of any of the components in the formulation. In conclusion, all components of formulation on evaluation were found to be compatible, with good encapsulation efficiency. The formulation provides efficient drug targeting and sustained release profile of the drug easing the release process at pH- 5 up to higher concentrations for72 hr.

Keywords: Cancer, nanohybrids, targeted drug delivery, formulation.

OR/ST1/0048

FORMULATION AND EVALUATION OF TENOFOVIR DISPROXIL FUMARATE AND EMTRICTIABINE IMMEDIATE RELEASE FILM COATED TABLETS

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Abstract The goal of this study was to develop and assess immediate release film coated tablets containing Emtricitabine and Tenofovir Disoproxil. Wet granulation technique was used to prepare various batches of immediate release film coated tablets using different disintegrating agents, including Lycotab C, Pregelatinized Starch, and Hydroxy Propyl Cellulose (HPC LH 11). Micromeritic characteristics of the produced granules, including bulk density, tapped density, compressibility index, Hausner's ratio, and angle of repose, were evaluated. The prepared tablets were evaluated for weight variation, hardness, thickness, friability and in vitro drug release using 0.01 N HCl as a dissolution medium. F8 demonstrated the fastest medication release of all the formulations within 45 minutes. To assess the release kinetics and mechanism of the drug, the release data was fitted to a number of mathematical models, including Higuchi, Krosmeyer Peppas, and First order. The drug release mechanism was Non-fickian diffusion, according to the release kinetics for formulations. The findings of the stability experiments revealed that neither the physical characteristics nor the drug content had undergone any appreciable modifications.

Keywords: Emtricitabine, Tenofovir disoproxil fumarate, Di calcium phosphate, Pregelatinised starch, Hydroxy propyl cellulose, Lycotab C

OR/ST1/0050

DEVELOPMENT AND EVALUATION OF FAST DISSOLVING ORAL FILMS OF MEFENAMIC ACID FOR THE MANAGEMENT OF FEVER

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Abstract The existing formulations of Mefenamic acid (MA) used for the treatment of fever in the pediatric population is reported several drawbacks. Based on it, the MA-loaded oral dispersible film (ODF) was developed for the management of fever. The solubility of MA was improved by forming inclusion complexes with β cyclodextrin. Mefenamic acid-β cyclodextrin inclusion complex quantity sufficient for 65mg of mefenamic acid was fixed as the loading dose in films. Mefenamic acid-β cyclodextrin inclusion complex quantity sufficient for 65mg of mefenamic acid was fixed as the loading dose in films. The ODF was formulated by solvent casting method using PVA (2%w/v), crospovidone (2-4% w/v), saccharin sodium (1%w/v), citric acid (1%w/v), and orange flavour (q.s). The statistical analysis of the data suggested PVA-based MA ODF strips with 4%w/v of crospovidone i.e., P3 as the best. For P3, folding endurance (253.3±0.33), drug content (95.46±0.93%), disintegration time (28.6±2.0sec), cumulative % drug release (97.41±0.68% in 180sec), were within the acceptable limit. The statistical analysis of the data suggested a PVA-based mefenamic acid oral dispersible film strips with 4%w/v of crospovidone i.e., P3 as the best. For P3, folding endurance (253.3±0.33), drug content (95.46±0.93%), disintegration time (28.6±2.0sec), cumulative % drug release (97.41±0.68% in 180sec), etc. were within the acceptable limit. The in vitro dissolution profile of P3 was statistically similar to the marketed mefenamic acid suspension and superior to tablets. The aluminium foil offered a better shelf- life (≈ 1.5 years) for the optimized mefenamic acid oral dispersible films i.e., P3.

Keywords: *Oral dispersible films., Mefenamic acid., Kneading method., Solvent casting., Inclusion complex.*

OR/ST1/0051

FLAX SEED ANASTROZOLE NANOPARTICLES: AN EFFECTUAL TREATMENT FOR BREAST CANCER

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Abstract Breast cancer is the most frequent neoplasm in the worldwide female population, it is a highly heterogeneous disease represents a leading cause of cancer deaths in the women. The present aim of this research is to formulate the anastrozole and flax seed nanoparticle-based drug delivery system for the breast cancer, in order to understand the interaction of malignant cell with the microenvironment. Multifunctional polymeric vehicle with anastrozole and flaxseed extract was prepared by a single emulsion evaporation method, using PLGA. The results indicated that the diameter of nanoparticles was 361±2.12 nm as defined by anastrozole and flax seed (ANS-FX-NPS). The entrapment efficacy of formulation was found to be 81±1.32respectively. The NPs showed an85% in-vitro drug release pattern. The MTT assay was done to, MCF-7 cell lines. Enhanced cellular uptake ability of the targeted NPs toMCF-7 was evaluated in-vitro by confocal laser scanning microscopy. The results indicated that compared to anastrozole alone or flax seed extract the ANS-FX-NPs had significant efficacy at IC50 concentration. The designed NPs can be used as promising multifunctional platform for detection and targeted drug delivery in breast cancer.

Keywords: *Anastrozole, Breast cancer, Flax seed, MCF-7 cell lines.*

OR/ST1/0052

MAGNETIC NANOPARTICLES IN CANCER IMAGING

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Abstract Nanotechnology provides a flexible platform for the development of effective therapeutic nanomaterial's that can interact specifically with a target in a biological system and provoke a desired response. Of the nanomaterial's studied, iron oxide nanoparticles have emerged as one of top candidates for cancer therapy. Their intrinsic superparamagnetism enables non-invasive magnetic resonance imaging (MRI), and their biodegradability is advantageous for in vivo applications. A therapeutic super paramagnetic iron oxide nanoparticle (SPION) typically consists of three primary components: an iron oxide nanoparticle core that serves as both a carrier for therapeutics and contrast agent for MRI, a coating on the iron oxide nanoparticle that promotes favourable interactions between the SPION and the biological system, and a therapeutic payload that performs the designated function in vivo. The payload can be genes, proteins, chemotherapy drugs, or a combination of these molecules. Each type of therapeutic molecule requires a specific coating design to maximize the loading and to achieve effective delivery and release
The unique physical properties of nanomaterial's enable them to serve as the basis for superior imaging probes to locate and report cancerous lesions and as vehicles to deliver therapeutics preferentially to those lesions.

Key words :*Nanotechnology , SPION, MRI imaging , non-invasive, therapeutic payload.*

OR/ST1/0053

DEVELOPMENT OF PHYTOCONSTITUENT LOADED NANOSTRUCTURED LIPID CARRIER GEL FOR MANAGEMENT OF RHEUMATOID ARTHRITIS

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Abstract

Phytoconstituents holds great potential to manage autoimmune, inflammatory disorder and musculoskeletal disorders like Rheumatoid arthritis. However, its therapeutic potency is obstructed due to various factors like rapid metabolism, poor solubility, GI irritancy, and lower bioavailability. Work aimed to design and optimize capsaicin loaded NLCs with higher drug entrapment, prolonged release and better stability. NLCs were prepared and optimized by 3 factor 3 level Box-Behnken design using solid: liquid lipid (X1), surfactant concentration (X2) and sonication time (X3) as independent variable while particle size (Y1), and entrapment efficiency(Y2) as dependent variable. SEM demonstrated almost spherical and uniform particles. PDI, zeta potential, entrapment efficiency and % drug release observed satisfactory, for 0.443 $\pm$ 0.96, -17.7mV, 81.8 $\pm$ 0.18% and 94.87313 $\pm$ 1.94. The NLC demonstrated prolonged release for 8 h. These optimized batches were then incorporated into Carbopol 940 gel, and this gel showed 3.58$\pm$0.21spreadability with 6.94 pH and shear thinning thixotropic behaviour, with no sign of skin irritation. The formulation was found to be stable under required storage conditions.

Keywords: NLC, Phytoconstituents, Rheumatoid arthritis, gel

OR/ST1/0054

SOLUBILITY ENHANCEMENT OF ATORVASTATIN USING SOLID PHOSPHOLIPID DISPERSION TECHNIQUE

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ABSTRACT

Hyperlipidemia is a common cause of cardiovascular diseases. Statins are used to manage hyperlipidemia. However, solubility is the major constraint to its bioavailability and therapeutic action. Therefore, its aqueous solubility needs to be improved. In the present investigation, the solid dispersion technique using phospholipid as a carrier was selected to enhance the solubility and dissolution of atorvastatin having a higher plasma half-life of 18–24 hours compared to that of other statins. The solid phospholipid dispersion of atorvastatin was prepared by a solvent evaporation method. Adsorbent and disintegrant were employed for better flow property and faster dissolution. The solvent was selected based on the maximum solubility of the atorvastatin from its solid dispersion. The solvent system of methanol and ethanol in the ratio of 1:1 exhibited improved solubility compared to others. The influence of phospholipid proportion on solubility and dissolution behavior of atorvastatin was evaluated. The results indicated that atorvastatin and phospholipid in the ratio of 2:3 was an optimized batch showing maximum solubility of 614 µg/ml, in vitro dissolution of 91.2±0.42% in 90 mins, and in vitro permeability of 58.37±0.26% in 120 mins. The optimized batch was characterized using Differential Scanning Calorimetry and Powder X-Ray Diffraction studies. The result confirmed the conversion of crystalline atorvastatin to an amorphous form. Thus, solid dispersion prepared using phospholipid as the carrier is a promising approach for enhancing of solubility of atorvastatin.

Keywords: *Atorvastatin, phospholipid, adsorbent, disintegrant, solvent evaporation method*

OR/ST1/0055

FORMULATION AND EVALUATION OF ONDANSETRON HYDROCHLORIDE SUSTAINED RELEASE PELLETS BY USING NATURAL GUMS

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Abstract

Petite free-flowing spherical pellets made up of fine powder or granules, which may be administered as tablets or capsules for different diseases. Pellet size range is 0.5-2.0 mm. Smooth surface and spherical shape are needed for homogenous film coating. Extrusion Spheronization was used to make pellets from 30g MCC and 4% xanthan gum. The wet dough was fed into extruder and dried in a cooled vacuum oven and coated with HPMC polymer and dried to get blank pellets. Medication was combined to get drug filled pellets. The pellets were tested for in process quality. The value obtained for the bulk density and tapped bulk density for all formulation lies within the acceptable range and with no much difference found between bulk density and tapped bulk density. The percent compressibility of pellets was determined by Carr's compressibility index and Hausner ratio was found to be in a range of 1.049 which shows good flow property and Friability test have done for all formulations and it lies in the normal range. In this work, ondansetron hydrochloride sustained release pellets were made by extrusion and spheronization using natural gum (xanthan gum) and HPMC K15M as polymer. With a 4 percent natural gum binder, F-4 showed good drug release over an 8-hour period and was found to be within the monograph's limits.

Keywords: Ondansetron Hydrochloride, UV Spectrophotometer, pellets.

OR/ST1/0057

APPLICATION OF LYOPHYLIZATION PROCESS IN FORMULATION OF ODT BY USING BOX-BEHNKEN DESIGN FOR THE TREATMENT OF OVER ACTIVE BLADDER

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Abstract

Over active bladder (OAB) is a condition characterized by urinary urgency which may or may not be accompanied by urinary incontinence and its common in geriatric patients.The beta-3 Adrenoreceptor (AR) agonist i,e Mirabegron plays an important role in the relaxation of urinary bladder detrusor smooth muscle and is used for OAB. It belongs to BCS Class III drugs and has less bioavailability (25-40%) and the purpose of the study is to develop and optimize Mirabegron ODT formulation using lyophilization technique. Box-Behnken is an independent quadratic design with excellent results for optimization process. Three-factor, three-level Box-Behnken design was utilized for optimization of the prepared formulation. The optimized formulations were evaluated for general appearance, tablet size and shape, uniformity of weight, surface pH, drug content, content uniformity, wetting time, *in-vitro* disintegration time ,*In-vitro* dissolution. Among all the formulation, F7 formulation containing 3%Gelatin, 3%Mannitol, 1% Menthol, disintegrate within 8sec with 97% Drug content, and showed faster dissolution rate. The formulated lyophilized Mirabegron ODT can be a boom to the geriatric patients with over active bladder disorder.

Keywords: *Over active bladde ,Mirabegron, Lyophilization, Box-Behnken design ,Disintegration time, Drug content.*

OR/ST1/0058

FORMULATION AND EVALUATION OF ASPIRIN-PLGA MICROSPHERE FOR THE DENTAL STEM CELL STIMULATION

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Abstract

According to WHO, dental caries is the most prevalent oral disease, and its progression leads to tooth loss. Clinical management of caries focuses on the severity and extent of the disease with the main aim, i.e., the 'art' of creating a good restoration. Recently, it has been reported that aspirin can stimulate existing stem cells and regenerate damaged teeth. But, the therapeutic effectiveness of a drug depends on developing a suitable novel drug delivery system, to retain at the site and suitably release the drug to produce effective therapy. Therefore, the present investigation intends to develop Aspirin-PLGA microspheres for the restoration of dentin. Aspirin-PLGA microsphere was formulated by the double emulsion technique and evaluated for particle size, encapsulation efficiency, characterization (differential scanning calorimetry, X-ray powder diffraction), *in vitro* release, and irritation testing using the HET-CAM method. The formulation exhibited good encapsulation efficiency(87.31±1.52%) and particle size of 7.52 µm by SEM. *In vitro* release study exhibited sustained release(98.76±0.49%) for 16 days and triphasic release (initial slow burst phase, a lag phase, and an accelerated release phase). This confirms that release is due to polymer erosion, swelling, and degradation. The *ex vivo* permeation study also confirmed sustained permeation and showed the significant partition and accumulation of the drug in the tissue. Further, the prepared formulation showed significantly low irritation compared to positive control by HET-CAM method. Thus, the above findings elucidated that the formulation is having the potential to stimulate the stem cells, hence facilitating dentinogenesis.

Keywords: *Stem cell, Dental caries, Sustained release, Aspirin, Dentinogenesis, Microsphere.*

OR/ST1/0060

DESIGN AND DEVELOPMENT OF POLYMERIC MICRONEEDLE DOSAGE FORM OF TACROLIMUS

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Abstract

Tacrolimus is a BCS class II immunosuppressive drug having narrow therapeutic index and poor oral bioavailability due to p-glycoprotein efflux, pre-systemic metabolism and further shows prominent neurotoxicity, nephrotoxicity when administered orally. Hence, aim of the study is to prepare polymeric microneedle (PMN) of tacrolimus to circumvent disadvantages associated when delivered orally, provide painless delivery, control the release, thereby improving the patient compliance. PMN formulations were formulated by solvent casting method using bees wax based mould. Central composite design was used to optimize the concentrations of Polyvinyl pyrrolidone (PVP) K90 and Eudragit RS100 as polymers (independent variables) and their effect on two dependent variables (mechanical strength and tensile strength). The optimized microneedle patch was evaluated for various parameters such as optical microscopy, scanning electron microscopy, drug content, *in-vitro* diffusion study and release kinetics. Formulation F_6 with 125 mg of PVP K90 and 125 mg of Eudragit RS100 was selected as optimized formulation and its microscopy evaluation confirmed microneedle length 470.79 µm, base width 156.33 µm and pitch distance 709.33 µm. Formulation F_6 exhibited 97.49±0.55% drug content and 79.7±0.09% of drug release at 30 hours. Further, release order kinetics of prepared polymeric microneedles confirmed zero order-controlled release of drug. Hence, it can be concluded that PMNs of tacrolimus can be used to overcome the shortcomings associated with oral delivery and can maintain therapeutically effective drug concentration by directly delivering the drug to the dermis layer; thereby enhancing the bioavailability. Thus, polymeric microneedles represent a promising drug delivery system for tacrolimus.

Keywords: *Tacrolimus, Polymeric microneedle,* Central composite design, *Mechanical strength, Tensile strength*

OR/ST1/0061

PHYTO-PHOSPOLIPID COMPLEXATION OF GENISTEIN FOR THE IMPROVED BIOACTIVITY

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Abstract

The present study was aimed at development and evaluation of the phyto-phospholipid complexation of genistein (PLGC) for improvement of its poor aqueous solubility, oral bioavailability and bioactivity. PLGCs were prepared by solvent evaporation technique. Prepared PLGCs were evaluated for entrapment efficiency, aqueous solubility, particle size and zeta potential, FT-IR, ^{1}H-NMR, DSC, PXRD and SEM techniques. Functional characterizations of PLGCs were carried out by *In vitro* dissolution, diffusion study, *ex-vivo* permeability, antioxidant, pharmacokinetic, anti-inflammatory, hepatoprotective studies. The PLGC showed entrapment efficiency around ~ 97.88 % w/w. PLGC significantly increased aqueous solubility around ~ 2-fold as compared to pure genistein. The optimized complex displayed lower particle size around ~176.9 nm with better physical stability. Characterization studies confirmed the formation of PLGC via participation of hydrogen bonding, ion-dipole forces and van der Waals forces. *In vitro* dissolution, diffusion and *ex-vivo* permeability results revealed that PLGC enhanced rate and extent of dissolution, diffusion and permeation as compared to pure genistein. PLGCs showed increased antioxidant activity around ~ 2-fold as compare to pure genistein. PLGC enhanced the oral bioavailability of genistein via improvement of C_{max}, t_{max}, AUC and half-life. The PLGC at a dose of 20mg/kg remarkably improved the anti-inflammatory potential of genistein in carrageenan-induced albino rat model. PLGC had exhibited better hepatoprotective activity amongst pure genistein. Findings concluded that the phyto-phospholipid complexation technique is a promising technique and thus, improves aqueous solubility, permeability, oral bioavailability and bioactivity of genistein and other phytoconstituents with similar characteristics.

Keywords: *Aqueous solubility, Bioactivity, Bioavailability, Genistein, Phospholipon 90 H.*

OR/ST1/0063

FORMULATION OF SELF-EMULSIFYING DRUG DELIVERY SYSTEM USING OPTIMIZED MIXTURE OF OIL AND Smix FOR BIOAVALIABILITY ENHANCEMENT OF LIPOPHILIC METHOTREXATE

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Abstract: Many new drugs/active pharmaceutical ingredients currently being developed exhibit low solubility and bioavailability in water. Lipophilic drugs are notoriously difficult to dissolve and are very poorly bioavailable, making the development of self-micro emulsifying drug delivery systems imperative. A fine oil in water oil/water emulsion may be created when these systems are gently agitated, followed by dilution in aqueous media, such as gastrointestinal fluids. SEDDS containing Methotrexate were formulated in this study. To develop SEDDS, Isopropyl Myristate, Tween 80 and Transcutol were used. A 3^2-factor design was used to study the effect of oil and surfactant concentrations on the emulsification process. As surfactant levels increased, the viscosity increased significantly based on multiple regression analysis data. A reduction in emulsification time may also decrease Emulsion droplet sizes. As surfactant concentration increased, drug solubility improved, resulting in rapid drug release from the formulation. We optimized the M9 formulation to achieve a cumulative drug release of 98%. The nine formulations M1-M9 were evaluated for their globule size, zeta potential, and drug content. A transparent emulsion with a globule size of 143.69 - 202.44 nm is formed, the zeta potential ranges from -26.58 ± -25.29 – -9.47 ± -8.87, showing a stable formulation, and the drug content ranges from 93.55 ± 2.13 – 97.45 ± 2.37. SMEDDS formulation had an AUC of 195.371, whereas methotrexate suspension. This is due to increased methotrexate's solubility and bioavailability in the systemic circulation, which increases AUC.

Keywords: *Self-emulsification, 3^2 Factorial Design, Bioavailability, Lipophilicity, Solubility*

OR/ST1/0064

4D PRINTING BIOMEDICAL SCAFFOLDS: CURRENT PROGRESS AND APPLICATION IN BONE TISSUE ENGINEERING

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Abstract: 4D printing is an emerging and advanced technology of manufacturing and fabricating a smart complex structure which can change its own behavior while exposing to external environment. Here the 4th dimension "Time" is integrated to add a lot of advantages to the 3D (Lateral and Vertical movement) bio printed scaffolds in bone tissue engineering to make a microscopic change in its shape, size, pH, properties or function with respect to an applied external stimulus such as heat, light, pressure or moisture. In this regard, the 4D printed Scaffolds draws a special attention in pharmaceutical and biomedical field to do the extensive research by exploring various dugs for a particular genetic or hereditary disease. This review highlights on the transformation of preprogrammed dynamic polymer with their composites and the shape memory polymers used as the smart materials (stimulus responsive) for 4D printing of biomedical scaffold in tissue engineering. These dynamic scaffolds undergo morphological changes during the application of external stimuli in a preplanned manner as per software-based simulation. After that the current progress and application of this updated technology is explored for the development of implantable biomedical scaffolds and synthetic tissues in bone tissue engineering.

Keywords: *4D Printing, 3D Printing, Scaffolds, Dynamic polymer, Shape memory polymer, Tissue engineering.*

OR/ST1/0065

LIPID-BASED NANOMEDICINE AGAINST TRIPLE-NEGATIVE BREAST CANCER CELLS

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Abstract

Triple-negative breast cancer (TNBC) is caused by progesterone and estrogen receptor deficiency and the lack of human epithelial growth receptor type 2 (HER 2) downregulation. Because of the heterogeneity, TNBC has a poor prognosis. Compound X is an efficient anti-cancer agent that can sensitize drug-resistant chemotherapeutic drugs and selectively target breast cancer stem cells. Compound X-loaded liquid crystalline nanoparticles are developed in this formulation. It is developed by vortexing compound X and glyceryl monooleate (GMO) in ethanol, then transferring it to an aqueous liquid with a surfactant (Pluronic F-127) and vortexing for 3-5 minutes at 2500- 3500 rpm. Compound X has been discovered to have anticancer properties. Compound X can sensitize drug-resistant chemotherapeutic drugs while still selectively targeting breast cancer stem cells. It works by affecting NF-kB, autophagy, Stat3, EMT, Wnt signaling, p-glycoprotein, disruption of membrane potential, ER stress, oxidative stress, and caspase-mediated apoptosis. The Box Behnken design is used to optimize the formulation. 183.4nm, 0.253, and 99.3 % are the particle size, PDI, and entrapment efficiency, respectively. Compound X-NPs are 4.3 times more effective against MDA-MB-468 cells and 3.3 times more effective against MCF-7 cells than naive drugs in cell viability assays. In MDA-MB-468 and MCF-7 cells, compound X-NPs have 1.28 and 1.1 times higher cellular intake than compound X alone. The percentage of the released drug after 120 hours is estimated to be 95%. The stability analysis was conducted at 4° and 25°C, the formulation was stable at 4°C.

Keywords

Triple-negative breast cancer; Nanoparticles; Liquid crystalline nanoparticles;

Anticancer; Cell viabilibility.

OR/ST1/0066

FORMULATION AND EVALUATION OF NERATINIB NLC FOR BREAST CANCER THERAPY

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ABSTRACT:

Breast cancer is the most commonly diagnosed cancer in women. HER2 (Human Epidermal Growth Factor 2 Receptor) positive breast cancer is a type of early breast cancer that accounts for 20-25 % of all the cases. The first-line treatment HER2+ includes the targeted treatment with Trastuzumab. Neratinib is a tyrosine kinase inhibitor developed as an adjuvant therapy to Trastuzumab, to minimize recurrence. This research aims to formulate and evaluate Neratinib (NB) loaded nanostructured lipid carrier (NLC) for treating breast cancer. The NB-NLC was prepared by melt-emulsification followed by ultrasonication technique. Box-Behnken Design (BBD) was used for the optimization of the formulation. The optimized formulation's particle size, zeta potential, entrapment efficiency, and in vitro drug release were evaluated. The in vitro release study showed a rapid drug release in the initial stage, followed by slow sustained drug release lasting 72 hours. The stability study conducted for 45 days confirmed that the NB-NLCs were stable. The obtained results suggest that NB-NLC may be a promising drug delivery system over the conventional dosage form.

Keywords: Neratinib, Nanostructured lipid carrier (NLC), Box-Behnken Design, Breast cancer.

OR/ST1/0067

DEVELOPMENT AND EVALUATION OF TERBINAFINE HCL NANO SPONGE-BASED HYDROGEL FOR IMPROVED ANTI-FUNGAL ACTION

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Abstract

Fungi is a non-motile form and its basic structural unit consists of either a chain of cylindrical cells or a unicellular form. Nano sponges (NS) are nano size (250nm – 1m) solid particles with porous surface. Topical formulations like ointments and cream require active ingredients in high concentration for effective treatment, due to low efficacy that lead to side-effects, due to uncontrolled drug input. Terbinafine hydrochloride is a synthetic antifungal allylamine agent used to treat skin and nail superficial fungal infections. The study focuses on formulation of NS using β-cyclodextrin as polymer and DMC as cross linker using hot melt method and the NS is optimized by Box-Behnken design. NS gel was formulated using Carbopol in varying concentration. The compatibility between drug and polymer was carried out by FTIR, DSC, HNMR studies. The study reveals that no interaction between the drug and excipients. The NS-loaded Terbinafine-HCL gel formulation was clear, viscous, white in colour and homogeneous. The optimized NS formulations were characterized by Particle Size (175.4nm), PDI (0.255), Entrapment efficiency (79±0.5), The SEM images shows the prepared Nano sponge were irregular in shape and porous in nature, PXRD proved that Terbinafine HCl lost its crystalline nature. NS loaded hydrogel shows pH of 5.7 of topical gel, indicates there is no skin irritation caused by the gel. *In vitro* release study was performed. Prepared topical gel formulation has sustained drug release than plain gel. The above result concluded that Terbinafine HCl loaded NS as topical gel is suitable for treatment of dermatophytosis.

Keywords

Nano sponges; Terbinafine HCl; Anti-fungal; Cyclodextrins; Dermatophytosis.

OR/ST1/0068

DEVELOPMENT OF NANOSIZED POLYELECTROLYTE COMPLEXES OF CURCUMIN FOR IMPROVED ANTICANCER EFFICACY

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Abstract: Though Curcumin has strong anticancer properties it has limited application due to hydrophobicity and poor bioavailability. The present research was conceived to formulate and evaluate nano-sized polyelectrolyte complexes (PECs) of Curcumin to improve its solubility, bioavailability and uptake by cancer cells. Self assembled nano-sized PECs of curcumin were prepared by electrostatic complexation between the anionic Chitosan and cationic sodium alginate. Drug - excipient compatibility was confirmed by FTIR studies. Methods such as simple mixing, homogenisation and ionic gelation were used for formulation. A 3^2 Factorial design was adopted and optimization done using the Design Expert® Software. Evaluation of the optimized formulation showed a particle size of 172.4 nm, drug encapsulation efficiency of 69%, and 8h *in vitro* drug release. The cytotoxic activity of the formulated nano-sized PECs of Curcumin towards MCF-7 cell lines was confirmed by MTT assay. The IC_{50} value of the test sample was subject to 24 h treatment. The hydrophilic polymers Chitosan and sodium alginate improved curcumin encapsulation, solubility and bioavailability. The zeta potential of the optimized formulation was found to be -25.1 mV indicating stability of the prepared Curcumin nano PECs. As Curcumin is released faster in acidic pH, the acidic tumour cells enhanced the release of Curcumin due to reduced electrostatic interaction and rupture of the nano PECs leading to cytotoxicity of the cancerous cells while the healthy cells remained unaffected. Thus, the formulated nano PECs of Curcumin exhibited an immense potential for enhanced anticancer activity.

Keywords: *Nano-sized polyelectrolyte complexes, Curcumin, Chitosan, sodium alginate, intracellular uptake, anticancer, MTT assay*

OR/ST1/0069

"DESIGN AND EVALUATION OF MUCOADHESIVE BUCCAL DRUG DELIVERY SYSTEM OF GRANISERTON HYDROCHLORIDE"

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Abstract: Granisetron hydrochloride, a 5 HT3 antagonist is a powerful antiemetic drug belongs to BCS Class III which has oral bioavailability of 60% due to hepatic first pass metabolism and has a short half-life of 3 h. To overcome the above drawback, the present study was carried out to formulate and evaluate buccal films of Granisetron hydrochloride. The films were prepared using polymers such as polyvinylalcohol (PVA), Hydroxypropyl Methyl Cellulose (HPMC), in different ratios by solvent casting method. PEG 400 as plasticizers, mannitol employed as sweeteners and Sodium EDTA as a permeation enhancer. Satisfactory results were obtained when subjected to physico-chemical tests such as uniformity of weight, thickness, surface pH, folding endurance, uniformity of drug content, swelling index, bioadhesive strength, and tensile strength. Films were also subjected to *in vitro* drug release studies by using USP type II (paddle) dissolution apparatus. *Ex vivo* drug permeation studies were carried out using porcine membrane model. Drug permeation of 66–77% was observed through porcine mucosa within 28 min. Higher percentage of drug release was observed from films containing the high percentage of permeation enhancer. In conclusion the films of Granisetron hydrochloride is the promising formulation that could improve the bioavailability of the drug and also provide immediate relief from emesis.

Keywords: Buccal films, Granisetron hydrochloride, HPMC, polyvinyl alcohol, solvent casting technique.

OR/ST1/0071

FORMULATION AND EVALUATION OF AXITINIB NANO LIPID CARRIERS FOR MANAGEMENT OF AGE-RELATED MACULAR DEGENERATION

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ABSTRACT The purpose of the research was to develop and assess Axitinib-loaded nanoliposome capsules (AXT-NLC) for the treatment of age-related macular degeneration. Compritol ATO 888, Tween 80 (polysorbate 80), and Labrasol were used as the solid lipid, surfactant, and liquid lipid, respectively, in the preparation of NLCs using the melt-emulsification technique that done before the ultrasonication method. The drug-loaded NLC is made up of two different phases, namely the aqueous phase and the lipid phase. In addition, the aqueous phase was made up of water and Tween 80, while the lipid phase included the active ingredient together with the lipids that were indicated. The NLC formula was perfected with the assistance of the Box-Behnken technique included in the design - expert software (Design expert 10.0) programme. The optimised NLC formulation (AX-3) was subjected for further evaluation, by examination of particle size, FTIR, zeta potential, polydispersity index (PDI), entrapment efficiency, DSC, SEM, in-vitro research, and stability study. The particle size, zeta potential, and PDI were reported 193.1nm, -3.16mV, and 0.072 respectively. The efficacy of trapping was determined to be 96.58 %. The particles of AXT-NLC were determined to be round using SEM examination. Drug release from the NLC was 92% after 24 hours when performed in vitro using the dialysis-membrane/bag procedure in phosphate buffer (PBS) at a pH of 7.4 and 0.1% Tween 80. The stability testing showed that 45 days in the fridge did not cause any phase separation or other major changes. Based on the data shown above, AXT-NLC seems to be a viable delivery strategy for treating age-related macular degeneration.

Keywords: Age-Related Macular Degeneration, NLC, Axitinib

OR/ST1/0072

FORM CONVERSION AND SOLUBILITY ENHANCEMENT OF BCS CLASS II DRUGS USING HOT MELT EXTRUSION SYSTEM

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Abstract: Drug Mefenamic acid and Indomethacin is BCS Class II drug which is practically insoluble in water. An attempt was made to convert the crystalline drug to amorphous solid dispersion using twin screw processing. Drug polymer screening experiments were conducted on polymers; Eudragit EPO, HPMC AS, HPC P , Kollidone VA 64, and Soluplus. Impact of drug to polymer ratio and critical processing parameters (Barrel Temperature and Screw speed) were evaluated. No clear transparent extrudes were obtained in case of Eudragit, HPC AS and Polyox at any of the ratios evaluated. Out of the 6 polymers Kollidon VA-64 and Soluplus showed proper melting at 1:3 and 1:2 ratios. Hot melt Extrusion (HME) technology was used for converting Drug Mefenamic acid and Indomethacin to amorphous solid dispersion with Kollidon VA64 and Soluplus. Further DSC and p-XRD were carried out to check for amorphous conversion. Solid dispersions of Mefenamic acid and Indomethacin shows enhancement in solubility compared to pure drug. Further formulation optimization work is required to be carried out to ensure the solubility of the Extrudes.

Keywords: *Hot melt Extrusion, Solid Dispersion, TwinScrew Processing,*

OR/ST1/0073

HERBAL FORMULATIONS FOR THE TREATMENT OF TOPICAL SKIN DISORDERS

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ABSTRACT A large number of synthetic antimicrobial agents are available for topical as well as systemic use, however many limitations are associated with it. In addition, development of resistance is another major hurdle which keeps on demanding new drugs periodically. So, taking into account this factor, three different preliminary formulations i.e. ointments, gels and creams were prepared by using plant extracts, to improve patient compliance, enhance antimicrobial spectrum and enhance aesthetic properties. The objective of this study was to formulate and evaluate topical polyherbal formulation for the delivery of the active constituents present in plants to improve skin diseases. The plant extracts of *Ocimum sanctum (OS), Rubia cordifolia (RC), Glycyrrhiza glabra (GG)* were utilized for the preparation.Prepared three different Preliminary formulations i.e. ointments, gels and creams which are proved to be more compliant and effective and tested for various physicochemical parameters. The results when compared against prescribed range showed that cream is better over ointments. The endorsement on the polyherbal cream as most effective formulation is an important outcome to validate appropriateness of the formulation prepared. The antimicrobial activity of prepared polyherbal cream showed significant effect against all pathogens of the study. Thus current polyherbal cream is a unique cream which offers broader antibacterial and antifungal action in association with various complimentary properties which not only prevent co-existing conditions but reduces further need of drugs which perhaps is the primary goal of an ideal pharmacotherapy.

Keywords: *Ocimum sanctum, Rubia cordifolia, Glycyrrhiza glabra, topical cream, polyherbal cream*

OR/ST1/0074

FABRICATION AND EVALUATION OF DISSOLVING MICRONEEDLES OF ANTIBIOTIC DRUG FOR THE TREATMENT OF BACTERIAL INFECTIONS IN NEONATES/PAEDIATRICS

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ABSTRACT The focus of the current research was to extract the silk fibroin protein from silk cocoons to formulate and evaluate the dissolving microneedles containing an antibiotic drug called ceftriaxone for neonates/paediatric patients. The extraction of silk from silk cocoons involves the degumming process and protein purification by a dialysis membrane. The microneedle is fabricated by using the solvent casting method. Prepared microneedles were evaluated by in vitro, mechanical strength, and stability studies. Fourier Transform Infra-Red Spectroscopy and Differential Scanning Calorimetry studies showed that the drug and excipients are compatible. Scanning Electron Microscopy image shows the needles have sharp edges to pierce the skin of neonates/paediatric patients. It can be concluded that the extraction of silk fibroin proteins from cocoons can be used as a biomaterial in the formulation of the dissolving microneedles. In the future, the developed microneedles can be subjected to *in-vitro* and *in-vivo* studies and the suitability for the pharmaceutical market can be chosen dependent on the outcome results.

Keywords: *silk fibroin, ceftriaxone, dissolving microneedles, DSC, FTIR*

OR/ST1/0075

Elevated histamine concentration in the aqueous humor of glaucoma patients.

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Abstract:

Neurotransmitters (NTs) are important mediators of important ocular functions such as: It processes visual functions in the retina, maintains aqueous humor homeostasis, and regulates blood flow in the eye. This study examined variations in the levels of L-glutamic acid and γ-aminobutyric acid (GABA), histaminergic, adrenergic, cholinergic, and serotonergic NT in primary glaucoma patients compared with cataract patients. intended to make a decision. This case-control study included age-matched patients with primary open-angle glaucoma (POAG, n=14), primary narrow-angle glaucoma (PACG, n=21), and cataract (control, n=19). 3 groups were included. Patients' aqueous humor and plasma were collected, flash frozen at -80°C, and subjected to ultrasensitive liquid chromatography-tandem mass spectrometry (LC-MS/MS) analysis for NT quantification. Initial intraocular pressure and cup-to-disc ratio were statistically significantly increased in the POAG and PACG groups compared with the cataract control group. There was a statistically significant increase in aqueous humor histamine (5-fold, $p < 0.0001$) and a statistically significant decrease in PAOG 1-methylhistamine compared to controls ($p < 0.05$). Statistically significant increases in L-glutamate and GABA were observed in both glaucoma patient groups compared with cataract control groups. Adrenaline increased only in the PACG group (2.7-fold, $p<0.05$). No statistically significant differences in plasma NT levels were observed between groups. This study demonstrated a prominent role for the histaminergic system, alongside autonomic mechanisms, in the progression of glaucoma. Elevated L-glutamate and GABA may be due to retinal ganglion cell death. Further studies are needed to assess the effect of histamine on Müller cell dysfunction.

Keywords: glaucoma, POAG, PACG, histamine.

OR/ST1/0076

NANOEMULSION BASED *IN-SITU* NASAL GEL OF PROCHLORPERAZINE MALEATE: AS APPROACH TO IMPROVE BIOAVAILABILITY.

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Abstract Prochlorperazine maleate (PCZM) is a BCS class II drug used in the treatment of severe nausea, vomiting and short-term management of psychotic disorders like anxiety and schizophrenia. However the drug suffers from low oral bioavailability (16%) due to first pass metabolism. Hence it may be a suitable drug to be formulated as nanoemulsion(NE) based *in-situ* nasal gel(NG) to increase its bioavailability. Nanoemulsion were prepared by high speed homogenisation method using different oils, surfactants, co-surfactants selected based on solubility of the drug. Pseudoternary phase diagrams were constructed to optimise the ratio of oil, surfactant, and co-surfactant. NE were characterized based on the droplet size, PDI, drug content, %transmittance, stability and *in-vitro* drug release. Further the prepared NE were incorporated into NG using two thermosensitive polymers i.e., Pluronic®F-127(PF127) and F-68(PF68). The efficiency of the nanoemulsion based *in-situ* gels were checked by gelation temperature, viscosity, gel-strength, spreadability, *ex-vivo* permeation study, mucoadhesive strength and drug-deposition study. Oleic acid, tween80 and PEG400 were chosen for NE preparation. Clear NE points were computed from tween80:PEG400 (2:1) phase diagram and demonstrated globule size of 71.21 to 137nm and with enhanced *in-vitro* PCZM release >95% up to 8hrs. After incorporation of the selected N3 formulations of oil:Smix of 1:9 to a mixture of PF127 and PF68(20:1), the resultant NG formulations exhibited optimum gelation temperature 32°C±0.3 and gelation time(<10sec) with enhanced PCZM permeation and retention through sheep nasal mucosa. In conclusion, NE-based NG may be a promising dosage form for PCZM delivery.

Keywords: *Prochlorperazine maleate, Nanoemulsion, In-situ nasal gel, thermosensitive gel, ex-vivo permeation.*

OR/ST1/0077

DEVELOPMENT AND EVALUATION OF EFFERVESCENT GRANULES LOADED WITH PROBIOTICS FOR ORAL CARE

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ABSTRACT

The main objective of this study was to formulate and evaluate the effervescent granules loaded with probiotics for oral care. Probiotic therapy is a novel strategy in oral care which is believed to have the potential to address oral related issues. The effervescent granule was formulated using pre heat and wet granulation method. To formulate effervescent granules citric acid, tartaric acid, and sodium bicarbonate was taken in 1:2:3 ratios. Menthol crystals were used to add flavour and to provide cooling effect. The probiotics was incorporated directly into the excipient mixture. The obtained granules were sieved, dried and stored in air tight container. Two formulations F1 and F2 were prepared using Lactobacillus Fermentum (L1) & Lactobacillus Paracasei (L2) respectively. The prepared formulation was subjected to micromeritic evaluations. Both the formulations F1 & F2 showed good flow property. The effervescent time was around 2 – 2.5 min. The pH of the formulations was optimum for oral use. The probiotics Lactobacillus Fermentum (L1) & Lactobacillus Paracasei (L2) showed good antimicrobial property against Streptococcus mutans and Candida albicans. The prepared formulations F1 & F2 was subjected to gram staining test to determine the presence of lactobacillus organisms. The viability test for F1 & F2 formulations was carried out to determine the viable cells in the prepared effervescent granules. To conclude the prepared formulations containing Lactobacillus Fermentum & Lactobacillus Paracasei showed good antimicrobial activity against pathogenic organisms. Hence, showing promising result to extend the therapy to treat and maintain oral health.

KEY WORDS :*Brain Heart Infusion Broth ; Yeast Peptone Dextrose Broth ; Laminar Air Flow Unit ; Laminar Air Flow Unit ; Microbial Type Culture Collection*

OR/ST1/0078

SIMVASTATIN TRANSDERMAL FILM: DEVELOPMENT AND EVALUATION

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Abstract: Transdermal drug delivery systems are designed to deliver a therapeutically effective amount of drug across a patient skin. TDDS differ from traditional drug delivery and has many advantages such as non-invasive, ease of use, ease of withdrawal, avoidance of first pass metabolism and better patient compliance. The difficulty of permeation can be overcome by using a different combination of permeation enhancers. The current research aimed to formulate and evaluate simvastatin loaded transdermal films. The matrix-type transdermal films containing simvastatin ware prepared by solvent casting method using Ethylcellulose, HPMC E50 LV, Eudragit L100 as polymers, Propylene glycol as Plasticizer and oleic acid as permeation enhancer. For the evaluation of the transdermal film the *In vitro* drug release studies are conducted. The simvastatin transdermal film showed promising sustained release activity during *in vitro* release. The results found that using simvastatin incorporated in matrix-type transdermal films can lower plasma cholesterol and lipoprotein levels, and modulates immune response for a more extended time period as compared to the conventional dosage forms.

Keywords: *Simvastatin, transdermal films, HPMC E50 LV, Eudragit L100*

OR/ST1/0080

TERBINAFINE HCL FILM-FORMING SPRAY FOR THE TREATMENT OF TOPICAL FUNGAL INFECTIONS.

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ABSTRACT:

Terbinafine HCl is an allylamine used to treat fungal infections. It has substantial side effects that can be mitigated by using a topical semisolid dose form. Poor patient compliance, easily wiped off by garments as well as during daily activities, and instability are all major disadvantages of topical semisolid formulations. The objective of this study was to develop a 1% Terbinafine HCl film-forming spray formulation to manage topical fungal infections. The formulation was developed by combining polymers, penetration enhancer, plasticizer, and suitable solvent system. The central composite design with 3 independent variables and 2 dependent variables is implemented to optimize formulation. The film-forming spray was put through its tests to assess formulation and container related parameters. From the study it was observed that the concentration of ethyl cellulose and Eudragit RSPO has greater influence on the viscosity of the spray solution, whereas the eutectic mixture has greater influence on the drug permeation followed by the polymers. The stability studies have shown that the optimized formulation is stable. The study has concluded that the formulated film-forming spray formulation is highly efficient in treating the topical and transdermal fungal infections when compared to the traditional dosage forms.

Keyword: Terbinafine HCl , central composite design, film-forming spray, transdermal, fungal infection

OR/ST1/0082

FORMULATION AND DEVELOPMENT OF A PATIENT FRIENDLY MEDICATED KAJAL FOR MANAGEMENT OF DRY EYE DISEASE

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One of the intensifying paradoxes in public health is visual dysfunction related with instability in tear film, inflammation, and hyper-osmolarity. The treatment available in the market are aimed to restore these dysfunctions but associated with limitations. To overcome this, medicated cosmetic kajal was used to benefit symptoms associated with dry eye disease.To formulate and evaluate medicated cosmetic Kajal in management of Dry Eye Disease. Medicated cosmetic Kajal containing Lutein as bioactive agent was formulated by fusion method. The prepared kajal was characterized by FT-IR, thermal analysis, and assessed for physical appearance, pH, viscosity, spreadability, osmolarity, percentage yield, drug content, studies, drug release studies and release profile, *ex vivo* permeation studies and stability studies. The formulation revealed to be Black, semisolid, pleasant odor, smooth texture, non-greasy smear, easy to apply and homogenous. The Kajal formulation exhibited pH of 7.4, Viscosity of 37000 CPS, Spreadability of 9.8 g.cm/sec., osmolarity of 290 mOsmol/kg, percentage yield of 90.53%, drug content of 87.67 at 454 nm, prolonged drug release 89.96% at 36 hrs. The optimized cream remained stable for 90 days at 25, 30 and 40°C. Furthermore, *ex vivo* studies showed the prepared formulation to be suitable for corneal drug delivery in the management of dry eye disease. The present study signified that the Lutein loaded Kajal formulation showed a superior efficacy in dry eye disease that ensured as the best medicated cosmetic Kajal, that was smooth and homogenous.

Keywords: *Lutein, Medicated Cosmetic Kajal, Fusion method, In vitro studies, Ex vivo studies*

OR/ST1/0083

SOLUBILITY ENHANCEMENT STUDIES OF CURCUMA LONGA EXTRACT BY EMPLOYING TWIN SCREW HOT MELT EXTRUSION TECHNIQUE AND ITS CHARACTERIZATION

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Abstract: Curcumin (Curcumin longa extract) is a BCS Class IV drug which is insoluble in water. An attempt was made to convert the crystalline drug to amorphous solid dispersion using twin screw processing. Drug polymer screening experiments were conducted on polymers; Eudragit EPO, HPMC AS, HPCP, Kollidone VA 64, and Soluplus. Impact of drug to polymer ratio and critical processing parameters (Barrel Temperature and Screw speed) were evaluated. No clear transparent extrudes were obtained in case of Eudragit, HPC AS and Polyox at any of the ratios evaluated. Out of the 6 polymers Kollidone VA-64 and Soluplus showed proper melting at 1:3 and 1:2 ratios. Hot melt Extrusion (HME) technology was used for converting Drug Curcumin to amorphous ssolid dispersion with Kollidon VA64 and Soluplus. Further DSC and p-XRD were carried out to check for amorphous conversion. Solid dispersions of Curcumin and Curcumin shows enhancement in solubility compared to pure drug Further formulation optimization work is required to be carried out to ensure the solubility of the Extrudes.

Keywords: *Hot melt Extrusion, Solid Dispersion, TwinScrew Processing*

OR/ST1/0084

IN VIVO AND HISTOPATHOLOGICAL CHARACTERIZATION OF TOPICAL CLOTRIMAZOLE *IN SITU* FILM FORMING SOLUTION FOR ANTIFUNGAL ACTIVITY IN ALBINO WISTER RAT

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Abstract: The present research is aimed to assess the efficiency of the prepared in situ film forming polymeric spray in animal model. The objective was to create an antifungal polymeric spray solution for *in situ* film topical film. The formulation was prepared by solubilization technique, where polymer Eudragit RS-100, plasticizer PEG-400 were dissolved in ethanol. To this solution clotrimazole was added under continuous stirring condition. The prepared formulation showed promising results in *in vitro* evaluation such as pH, viscosity, drying time after spraying, drug diffusion studies and antifungal activity. The optimized CTZ polymeric spray solution was efficacy and effectiveness was tested on Albino Wistar rats. During the animal city, and systemic presence in different was studied. Studies suggests that the formulation is compatible with the animal skin. It can be concluded that Clotrimazole in a polymeric spray solution may be an alternative and effective method for treating different types of fungal infections on the skin.

Keywords: *Polymeric spray; Fungal infection; animal studied; Toxicity study; Candida albicans*

OR/ST1/0085

FORMULATION & PHARMACODYNAMIC EVALUATION OF ACECLOFENAC NANOEMULSION BASED TRANSDERMAL PATCHES FOR ARTHRITIS

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Abstract: Unlike Osteoarthritis, Rheumatoid arthritis (RA) exhibits damage in lining of joints that result in painful inflammation which can be eventually progressed into erosion and joint deformity. On the other hand, Nano Emulsions (NEs) are known to be one amongst the promising drug delivery systems which are simple, thermodynamically stable and optically isotropic liquid dispersions with 10 to 200nm ranged droplet size. The purpose of the study was to develop Nanoemulsion (NE) and NE based transdermal patches (TDP) of aceclofenac, perform their characterization and evaluation along with *in-vivo* Pharmacodynamic studies for optimized formulations of oral Nanoemulsions and nanoemulsion based transdermal patch. Solubility studies, pseudo- ternary phase diagrams were developed for various NEs containing Virgin coconut oil as oil phase, Tween 80 as surfactant and TEA as co surfactant. The prepared Nanoemulsions were subjected to various characterization studies and evaluation tests to optimize the best oil: Smix proportion to convert them into transdermal patches. The results proved that the NE formulation with Virgin coconut oil, tween 80 and TEA was best amongst others. The *In-vivo* results showed NEBTP gave better drug release when compared to the NE through oral route. The results suggested that transdermal drug delivery of Aceclofenac is a promising approach to treat arthritis.

Key Words: *Nanoemulsion, Transdermal drug delivery system, osteoarthritis, Aceclofenac.*

OR/ST2/004

Development of a Novel and Cost Effective UV Spectroscopic Method for Simultaneous Estimation of Amlodipine and Losartan Based on Absorption Correction Principle

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A simple and cost-effective absorbance correction method has been developed for simultaneous estimation of amlodipine besylate and losartan potassium in combination and validated in accordance to ICH guidelines. The standard stock solutions of drugs were prepared in methanol and subsequent dilutions were prepared in water. The analytical wavelengths selected for analysis of drugs were 365 nm and 250 nm respectively. Amlodipine besylate and losartan potassium displayed excellent linearity between concentration range of 2-100 µg/mL. The developed absorbance correction method was found to be precise, accurate, sensitive and robust. The % assay of amlodipine besylate and losartan potassium in synthetic mixture was found to be 96% and 102% respectively. The purpose of the current research work was to develop and validate an economical UV spectrophotometric method for estimation of antihypertensive drugs in combined dosage form. The developed method can thus be beneficially used to carry out routine analysis of amlodipine besylate and losartan potassium in bulk and in their combined dosage form.
Keywords: *UV Spectroscopic Method, Amlodipine, Losartan, Absorption Correction Principle.*

OR/ST2/006

Beta Amyloid Aggregation Inhibition: A Potent Method for Treatment of Alzheimer's Disease

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Amyloidβ (Aβ) deposition remains a hallmark in the pathology of Alzheimer's disease (AD). Developing probes for Aβ species could be used for blocking the initial steps of Aβ aggregation in which small molecules have emerged as a valid disease-modifying therapy for Aβ. In our studies with a goal to identify β-amyloid aggregation inhibitors, a series of candidates derived from studying the structure of the dye compound Congo Red a well-known stain for amyloid protein fibrils were synthesized and studied for β-amyloid inhibition activity. Refining the structural class from a diazolinked anthranilic acid derivative to an ethyl-linked moiety and also a propyl-linked moiety, we were able to synthesize a series of compound that have great potential for prevention of aggregation of Aβ peptides which can be easily excreted from the brain. We bereave this will help in preventing of plaque deposition and thus prevent the onset of Alzheimer's disease. Keywords: Amyloidβ, Alzheimer's disease, β-amyloid inhibition activity, anthranilic acid derivative, ethyl-linked moiety, propyl-linked moiety.

Keywords: Amyloidβ, Alzheimer's disease, β-amyloid inhibition activity, anthranilic acid derivative, ethyl-linked moiety, propyl-linked moiety.

OR/ST2/008

Determination of alendronate sodium in the different do of a marketed product by a green analytical method using FT-IR

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Alendronate sodium is a member of the bisphosphonate class of medications and is the sodium salt of 4-Amino-1-hydroxy-1-bisphosphonic acid. It is a potent anti-resorptive medication that is frequently prescribed to treat osteoporosis and Paget's disease. Due to the absence of a chromophore in its chemical structure, analysis of it is difficult. According to the literature review, alendronate sodium was examined utilizing a variety of techniques, including High-performance liquid chromatography (HPLC), High-performance thin layer chromatography (HPTLC). In this Fourier transform infrared (FT-IR) KBr pellet method was used to analyze alendronate sodium both qualitatively and quantitatively. This technique reduces trash creation and the effects of the procedure on the environment by not requiring the use of organic solvents. The benefit of this study is that sample preparation is fairly straightforward, and analysis takes less time. Alendronate sodium-specific strong bands in the range 1200-900 cm1 correlate to C-O and P=O stretches. The routine examination of alendronate sodium tablets was determined to be appropriate for the validated Fourier transform infrared method. Following the requirements of the International Conference on Harmonization (ICH), the method was validated and found to be adequate, precise, accurate, and reproducible. Alendronate sodium can be measured in raw materials for routine QC analysis using this established method as an environmentally friendly substitute. The pharmaceutical sector has been very interested in developing techniques that support waste generation reduction, prevention, or elimination because of the rising demand for environmentally friendly goods and services from government agencies and civil society.

Keywords: Alendronate sodium, FT-IR, green analytical method, bisphosphonate, osteoporosis, Paget's disease.

OR/ST2/0012

Synthesis and anticancer screening of plant derived cyclic pentapeptide, Dianthan F and its analog

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Despite significant advancements in cancer therapy, treating Cancer remained a challenge for developing and low income countries and thus exploring interest in creating newer anticancer agents with a new mode of action. Majority of peptides recovered from plants are "cyclopeptides." and have stronger biological effects, probably as a result of the stable configuration. Number of such cyclopeptides, showed to potentially have an anticancer impact in pharmacological screening.
The present research involves synthesis of Dianthan F, a plant derived cyclic pentapeptide cyclo (Gly-Pro-Phe-Val-Phe-) isolated from *Dianthus superbus* and its N-methylated analog with good yield expending solution phase technique. The synthesized intermediates and final compounds were confirmed by spectral studies including IR, NMR, MASS and elemental analysis. The preliminary cyctotoxic Brine shrimp assay exhibited LC_{50} value of 90.28939 for Dianthin F and 94.34483 for its N-methylated analog. The compounds were further screened for anticancer activity against a panel of 60 human tumor cell lines through one dose screening at NCI, USA. The results indicated that synthesized compounds are significantly active against Non-Small cell Lung Cancer cell lines (A549/ATCC, NCI-H226), **Prostate Cancer cell lines** (PC-3), **Breast Cancer** (MCF7) and Renal Cancer cell lines (SN12C, TK-10) in comparison with Vincristine as standard. N-methylated analog of Dianthan F was found to be more active against all above cancer cell lines, concluding that the electron donating functional groups are responsible for increasing biological activities against cancer cell lines. This work will explore a new line of research in the field of peptides and cancer.

Keywords: *Cyclopeptide, solution phase technique, brine shrimp assay, anticancer activity*

OR/ST2/0013

STABILITY INDICATING RP-HPLC METHOD FOR ASSAY OF DEXAMETHASONE IN ITS FORMULATION

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ABSTRACT

New, simple, reliable, and reproducible stability-indicating RP-HPLC assay method has been developed for quantitative analysis of dexamethasone in formulation using Agilent 1260 DAD Detector. A non-polar analytical chromatographic column Symmetry Waters C18 (150mm×3.9mm, 5µ), was chosen as the stationary phase. The mobile phase used 3.0 OPA Buffer and Acetonitrile. This RP-HPLC method also validated for various parameters as per ICH guidelines. The system suitability parameters proved that the method is suitable for quantifying dexamethasone. System suitability parameters were within the limits as indicated by good resolution. The precision was within the acceptance criteria of %RSD, i.e., not more than 2%Accuracy was performed with the concentration ranges 50%, 100%,150% and was found to be within the limit. No interference was observed at the main peak Retention time in all stressed conditions. Hence it can be concluded that the proposed method was a good approach for obtaining reliable results and can be used as a quality–control tool for routine analysis of dexamethasone in ophthalmic solutions.

Keywords – *OPA Buffer, Dexamethasone, Accuracy, precision*

OR/ST2/0014

Synthesis of aryl bis-thiourea analogs and evaluation as sensors for anion recognition

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The design and synthesis of compounds for molecular sensing ability is a promising area in supramolecular chemistry. The field of research has been receiving significant attention due to role of ions in medicine, biological processes and environment as well. Acetate ion has found to be a possible tracer for malignancy and used extensively in diagnosis of metastases and prostate cancer. In this present study, we have demonstrated the ability of multifunctional aryl bis-thiourea derivatives as a molecular sensor tool for recognition of anions. Aryl bis-thiourea derivatives were synthesized via hybridization technique using dithiocarbamate and thiosemicarbazide. Synthesized analogues were characterized by UV, FT-IR, PMR, CMR and mass spectroscopy. Synthesized compounds are aza(thia) rich anion sensors and were screened for anion recognition activity through UV-visible spectrophotometric titration, for acetate sensing ability. Striking color changes visible to naked eye were noted for sensor on addition of acetate ions and observed a red shift in UV titration curve. The binding stoichiometry was studied for 1:4 equivalence of sensor: anion and dissociation constant were determined with range of 0.8015 to 1.8064 for acetate ions. This work gives a new approach for detection of cancer and also has environmental applications.

Keywords: Acetate sensor, anion recognition, aryl bis-thioureas, UV-titration

OR/ST2/0016

Rationally designed new molecules for the treatment of tuberculosis

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Tuberculosis is a matter of concern as quarter of the population in the world is affected with it. The disease is more dangerous in case of multi-drug resistant and extremely-drug resistant tuberculosis and when it is associated with HIV. Recently total drug resistance tuberculosis case was reported in India. The currently available treatment for tuberculosis includes vaccination and drugs. The drugs available for the treatment show toxic effects and poor patient compliance, which lead to development of resistant strains. This situation reflects serious concern and new molecules have to be discovered with good activity and less side effects. In literature we found that recently discovered some antibacterial agents show potent activity against tuberculosis strain. But main drawback of these compounds is monoamine oxidase enzyme inhibition in human which lead to serious side effects. We have rationally designed new molecules with main focus on reduction of toxic effects and good activity. The designed molecules show promising results.

Keywords: *Tuberculosis, Toxic effects, Resistance, Anti-TB activity, Docking study.*

OR/ST2/0017

Docking Analysis and In-silico ADME Studies of Novel p38 Inhibitors Containing Imidazole Moiety

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Introduction: The p38 mitogen-activated protein (MAP) kinase regulates the biosynthesis and release of a variety of proinflammatory cytokines, including tumour necrosis factor-alpha (TNF-) and interleukin-1 beta (IL-1). As a result, inhibiting the p38 MAP kinase is regarded as a promising therapeutic strategy for inflammatory diseases. A diverse range of p38α MAP kinase inhibitors have been developed as potential anti-inflammatory agents, and some of them have entered phase III clinical trials.

Aim and Objectives: To perform docking studies and in-silico ADME parameters of a few selected imidazole derivatives as p38α MAP kinase inhibitors.

Methods: Docking studies were performed by using Autidock 4.2. The crystal structure of 1A9U was downloaded from the PDB databank. Pharmacokinetic In-silico ADME analyses were done for a few selected imidazole derivatives to fulfil the drug-likeness properties using molinspiration and swissADME webserver.

Result: As per the docking score, it was found that few derivatives were showing a good score compared to the prototype drug. Pharmacokinetic In-silico ADME analyses show that all the selected compounds obeyed Lipinski's rule and moderate to high bioactivity scores as kinase inhibitors.

Conclusion: We can conclude that we can move forward with further synthesis because all of the chosen Imidazoles have good docking scores and adhere to all in-silico ADME analysis parameters.

Keywords: *p38 MAPK, Imidazole, Docking, ADME analysis, Molinspiration, SwissADME*

OR/ST2/0019

Novel Analytical method development and its validation for simultaneous estimation of cardiac drugs Amiodarone Hydrochloride and Propranolol Hydrochloride

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The objective of this research work is to develop a simple, accurate, and a precise analytical method for simultaneous estimation of Propranolol Hydrochloride and Amiodarone Hydrochloride used for the treatment of cardiovascular diseases. HPTLC method was developed for simultaneous estimation of these drugs and the developed HPTLC method was validated acc. to ICH guidelines. Amiodarone Hydrochloride shows better solubility in Methanol and Propranolol Hydrochloride solubility in Methanol was increased by the addition of DMSO. For HPTLC Propranolol Hydrochloride shows a linearity range of 1.3-6.5µg/ml and Amiodarone Hydrochloride shows a linearity range of 1.4-7.0µg/ml. The percentage recoveries of Propranolol and Amiodarone were 99.4% and 95.23% respectively. The correlation coefficient was found to be 0.9998 for Propranolol and 0.998 for Amiodarone. Hence the developed and validated method can be used routinely since no analytical method was developed for simultaneous estimation of Propranolol Hydrochloride and Amiodarone Hydrochloride.

Keywords: - *HPTLC, Method development, Method validation, ICH guidelines, Amiodarone Hydrochloride, Propranolol Hydrochloride.*

OR/ST2/0020

In silico drug designing, pharmacokinetic properties, synthesis and antiproliferative activity of novel B-Raf kinase inhibitors

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Introduction Raf family of serine/ threonine kinases (A-Raf, B-Raf, C-Raf) are the essential components of MAPK (RAS/RAF/MEK/ERK) signaling pathway. Among the three Raf kinase isoforms, B-Raf is the most fascinating drug target because of its frequent mutations (B-Rafv600E) and thus enhanced kinase activity. The B-Raf mutations affect 30-60% of melanomas, 30-50% of thyroid cancers, 5-20% of colorectal cancers.
Aim and Objective The aim and objective of the current research is to design and develop an efficient drug targeting B-Raf by employing computational tools, then to synthesize and to assess the antiproliferative effect of the developed drug moieties.
Methods In this pursuit, novel triazolo-oxadiazole hybrids are designed using structure based drug design. The lead compounds were subjected to docking simulations using Autodock 4.0 at the binding site of B-Raf protein. The pharmacokinetic parameters are analyzed using Swiss ADME web tool. 12 derivatives were synthesized and the MTT assay was carried out against two cell lines A375 and Skmel23.
Results The *in silico* binding studies of the docked derivatives reveals that the ligand establishes hydrogen bonding interaction with Cys532, Gly 534, Gln 530 residues and followed Lipinski's rule of five. The five steps synthetic procedure is developed to synthesize the hybrids. The IC_{50} values from MTT assay manifests all the synthesized compounds are efficient of which one derivative is promising to be developed as clinical drug candidate.
Conclusion Novel, efficient and promising drug candidates are identified. Further studies are being carried out to establish inhibitory mechanisms towards the selective target
Key Words: *B-Raf, MAPK pathway, triazolo-oxadiazole hybrids, MTT assay*

OR/ST2/0021

Coercive Finding of six potential genotoxic nitrosamine impurities in favipiravir API: Liquid chromatographic method development and validation hyphenated with tandem mass detection

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A Purine nucleic acid analog (T-705), Favipiravir was indicated in the treatment of patients effected by SARS-CoV-2. Proposed study was conducted by developing a cleaning method using swab sampling technique in order to assess the maximum carry over limit based on therapeutic dose. A stratified sampling method was used as a part of collection of residues from SS 316 sheet with dimensions of 4 inches x 4 inchesx2 mm.10 strokes were made diagonally, horizontally and vertically all along the SS plate. Current method describes trace level quantification of nitrosamine impurities (NDEA, NDMA, NMBA, NMIPA, NDIPA, NEIPA) in Favipiravir API, which were made to separate using Symmetry C18 (150X4.6 mm, 5µm) with a set flow rate of 0.8mL per min by employing gradient program (0.1%v/v formic acid and 100%methanol) throughout the run time of 14 min. 1200µl of rinse volume was used before and after aspiration with 5 sec of dip time. Quantification and ionization were done in positive polarity mode of APCI using MRM. Ionization $(M+H)^+$ values were aquatinted as m/z 103 (parent), m/z 47 (Product), m/z 75 (parent), m/z 58 (Product), m/z 147.1 (parent), m/z 117 (Product),m/z 103.1(parent),m/z 61 (product),m/z 131 (parent), m/z 89 (Product), m/z 117.1 (parent), m/z 157.1 (parent), m/z 113.0 (Product) respectively for NDEA, NDMA, NMBA, NMIPA, NDIPA, NEIPA and Favipiravir. Linearity was performed for individual impurity at six levels (LOQ,50%,75%,100%,150%,200%) where the correlation coefficient (r^2) found to be between 0.997-1.000. Impurity solutions were found to be stable for 24 hours as calculated by the similarity factor.

Keywords: *NDEA, NDMA, NMBA, Favipiravir, NDEA, Nitrosamine impurities, APCI*

OR/ST2/0022

Synthesis and evaluation anthelmintic and *in vitro* anti-inflammatory activity of 2-(3-Phenyl-4,5-dihydro-[1,2]diazepin-1-yl)-substituted benzothiazole

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Synthesis of 2-(3-Phenyl-4,5-dihydro-[1,2]diazepin-1-yl)-substituted benzothiazole derivatives by the reaction of substituted 2-hydrazinyl 1,3- benzothiazole with carbonyl compounds and Potassium thiocyanate in presence of 2-butene and 5 N NaOH are reported. All the synthesized compounds were characterized by IR spectra and 1 H NMR spectral studies. The final compounds were screened for Anthelmintic activity in Manure worm (*Eisenia fetida*) as well as *in-vitro* anti-inflammatory activity HRBC Membrane stabilization and Effect on protein denaturation was evaluated against denaturation of egg albumin. Time of paralysis and time of death were calculated. Among all the synthesized compounds, compound A4 and B4 were found to show most potent activity. For compound A4, the time of paralysis was observed to be 42 min for 10 ppm and 22 min for 20 ppm, whereas time of death was observed to be 67 min for 10 ppm and 56 min for 20 ppm. For compound B4, the time of paralysis was observed to be 40 min for 10 ppm and 24 min for 20 ppm, whereas time of death was observed to be 65min for 10 ppm and 52 min for 20 ppm. A1, D2 and D6 showed good HRBC Membrane stabilization activity. While A1, and D6 showed good Effect on protein denaturation activity. Synthesized compound exhibited significant anthelmintic and *in vitro* anti-inflammatory activity. Further *in vivo* studies may prove good synthetic molecules.

Keywords: Benzothiazole, Anthelmintic activity, HRBC membrane stabilization, Protein denaturation

OR/ST2/0023

Analytical method development and validation for the estimation of amiodarone and propranolol by using UV spectroscopy

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The objective of this research work is to develop simple, accurate, and precise analytical methods for the simultaneous estimation of Propranolol Hydrochloride and Amiodarone Hydrochloride, used for the treatment of cardiovascular diseases. The UV-visible spectrophotometric method was established for the estimation. Amiodarone Hydrochloride show better solubility in methanol and the solubility of propranolol Hydrochloride in methanol is increased by the addition of DMSO (Dimethyl sulfoxide). UV-visible spectrophotometric methods showed linearity within the range of 16-24 µg/ml for propranolol and 4 -8µg/ml for Amiodarone. λmax were 288nm and 242nm respectively. The percentage recoveries of Propranolol and Amiodarone were 100% and 98.6% respectively. The correlation coefficient was found to be 0.99203 for Propranolol and 0.99761 for Amiodarone. The UV-visible spectroscopic method is rapid, cost-effective, more precise, and accurate. This method can be useful since no analytical method was developed for Propranolol and Amiodarone in combination.

Keywords: *Propranolol, Amiodarone, method development, vierordt's method, validation*

OR/ST2/0024

SYNTHESIS, IN SILICO AND INVIVO ANTIDIABETIC ACTIVITY OF 4-THIAZOLIDINONE DERIVATIVES.

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In the present investigation, a novel series of thiazolidininones were synthesized and evaluated for in-vivo antidiabetic activity. The key intermediates were obtained by heterocyclization of the respective 2-chloro-N-(aryl)-acetamides. The final products substituted thiazolidinones (FT1-8) were obtained by condensation of pyrrole-2-carbaldehyde and 2-chloro-N-(aryl)-acetamides. with in acetic acid. Using the Schrodinger suite system the *In-Silico* analysis was performed and docked to the human peroxisome proliferator-activated receptor gamma receptor, (PDB ID: 4EMA). The postulated structures of the thiazolidinones derivatives were confirmed by FT-IR, ^{1}H NMR, and Mass spectral data. *In-vivo* antidiabetic activity was carried out using Streptozotocin induced diabetic rat model and the various biochemical parameters were tested on the 15th day.

The presence of the electrons withdrawing groups such as –Cl supported significant antidiabetic activity of the products. Some of the compounds with *o*-chloro, and *3,4-dicholro* substituents exhibited significant antidiabetic activity. The computational studies also revealed the same data, which is consistent with the *In Vivo* data. Significant decreases in HDL, LDL, VLDL, cholesterol, triglycerides, and protein levels demonstrated the compounds' potential antidiabetic efficacy.

Keywords: Thiazolidinones, Antidiabetic, Molecular docking, Streptozotocin, Peroxisome proliferator-activated receptor gamma receptor.

OR/ST2/0025

SYNTHESIS, CHARACTERISATION, BIOLOGICAL EVALUATION, MTT ASSAY OF SOME NOVEL THIADIAZOLE DERIVATIVES AS ANTI-TUBERCULAR AGENTS TARGETING DECAPRENYL PHOSPHORYL BETA-D-RIBOSE2' EPIMERASE-1

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Annually, tuberculosis is the largest cause of death due to a bacterial infection, killing an estimated 1.8 million people around the world. This highlights the critical need for new, potentially effective therapeutic candidates to address the issue of drug resistance and bring diseases under control. Molecular interactions, docking scores, and unique properties were used as criteria for selection. To achieve the desired level of purity, the selected molecules were synthesised and subsequently recrystallized many times. Microplate Alamar Blue Assay (MABA) was used to assess the compounds' anti-mycobacterial activity against the TB H37RV strain, and their purity was determined using infrared (IR), nuclear magnetic resonance (NMR), and mass spectrometry (MS). The MIC value for Compound SDK1, SDK2 was 6.25 mcg/mL, whereas the MIC value for Compound SDK3, SDK5 was 3.12 mcg/mL, indicating that both compounds possessed anti-tubercular efficacy. The compounds with the highest purity and the lowest MIC value for tuberculosis (3.12 mcg/mL, 6.25 mcg/mL) were chosen for further investigation in cell line experiments. To evaluate how various chemicals affect HEK-293T and -93T-derived cell lines, the MTT test was performed (Human embryonic kidney cells). The MTT assay is widely used today to assess cell growth, cytotoxicity, and viability. Metabolizable cells in this experiment turn a yellow tetrazolium salt into purple formazan crystals, resulting in a colour change that can be measured colorimetrically. This study's findings indicate that the bigger the concentration of SDK1, SDK5 compounds, the higher the percentage of cells that are metabolically active and hence viable.

KEY WORDS: Thiadiazole, Synthesis, MABA, Anti-tubercular, MTT Assay.

OR/ST2/0026

Docking studies and in-silico prediction of pharmacokinetic properties benzimidazole derivatives

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Background:-Benzimidazole have wide range of biological activity such as anti-inflammatory, anti-microbial, anti-cancer, anti-diabetic, anti-tuberculosis, etc. Benzimidazole being one of the privileged scaffolds in the field of chemistry for development and synthesis of novel drug, have been studied widely due to their importance in the structure of Vitamin-B12. Benzimidazole scaffolds have potential to inhibit the receptors involved in inflammation i.e.COX-1, COX-2, Cannabinoid, Bradykinin,etc.

Objectives: - This work focused on the study of the benzimidazole derivatives for anti-inflammatory activity via molecular docking.

Materials and Methods: - The protein 6Y3C which is a COX-1 protein involved in the inflammation was selected, downloaded, prepared and analyzed. Docking study was performed for the benzimidazole derivatives with the prepare protein using PyRx Software.All the derivatives were analyzed for its binding affinity with the protein and for its efficiency.

Results: - The docking study of the ligands with protein shows that among all ligands, ligand 2C has the greatest affinity towards the protein and therefore posses potent anti-inflammatory activity.

OR/ST2/0027

Novel hybrids of thiazolidinedione-1,3,4-oxadiazole derivatives: Synthesis, molecular docking, MD simulations, ADMET study, *invitro* and *invivo* anti-diabetic assessment

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As compared to standard medicinal compounds, hybrid molecules that contain multiple biologically active substances have greater affinity and efficiency. Based on this concept, it was predicted that a combination of thiazolidinediones and 1,3,4-oxadiazoles may enhance α-amylase and α-glucosidase inhibition activity. A series of novel 3-((5-phenyl-1,3,4-oxadiazol-2-yl)methyl)thiazolidine-2,5-dione derivatives (5a-5j) were synthesized and characterized using different spectroscopic techniques i.e. FTIR, 1H-NMR, 13C-NMR and HR-MS. To evaluate Insilico, molecular docking, MMGBSA, and MD simulation were carried out which were further evaluated via in-vitro inhibition of α-amylase and α-glycosidase enzyme inhibition assays. In addition, the in-vivo study was performed on a genetic model of Drosophila melanogaster to assess the antihyperglycemic effects. The compounds (5a-5j) demonstrated α-amylase and α-glucosidase inhibitory activity in the range of IC_{50} values 18.42 ± 0.21to 55.43 ± 0.66μM and 17.21±0.22 to 51.28±0.88μM respectively when compared to standard acarbose. Based on the *in-vitro* studies, compounds **5a, 5b,** and **5j** were found to be potent against both enzymes. *In-vivo* studies have shown that compounds **5a, 5b,** and **5j** lowers glucose levels in Drosophila. Thus, the study recommends these compounds for further development as a new class of antidiabetic agents.

Keywords: α-Amylase, α-Glucosidase, Diabetes, Drosophila, Molecular docking, 1,3,4-Oxadiazole, Thiazolidinedione

OR/ST2/0028

Synthesis, *in silico* study, anticancer and antioxidant activity of veratraldehyde derived 1,3,5-trisubstituted 2-pyrazolines

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In search of new, more effective and selective anticancer agents, a series of 1,3,5 trisubstituted pyrazolines namely, 1-(3-(4-substituted phenyl)-5-(3,4-dimethoxyphenyl)-4,5-dihydro-1H-pyrazol-1-yl)ethan-1-one **(2a-j)** / 3-(4-substituted phenyl)-5-(3,4-dimethoxyphenyl)-1-phenyl-4,5-dihydro-1H-pyrazole **(3a-j)** were synthesized from the corresponding chalcone intermediates derived from the reaction between veratraldehyde and substituted acetophenones by condensing with hydrazine hydrate and phenyl hydrazine respectively. Completion of reaction was monitored by TLC, compounds were purified by recrystallization and structures were confirmed by UV, IR, ^{1}HNMR, ^{13}CNMR, and Mass spectral data. Title compounds were screened for anticancer activity against A549 (Lung carcinoma cell line) by SRB assay and antioxidant activity by DPPH radical scavenging assay. Doxorubicin and ascorbic acid were used as standard drugs. It was the only compound **3d** with electron donating hydroxy substituent displayed excellent anticancer and free radical scavenging activities with IC_{50} of 14.63μM and 3.008μg/ml respectively amongst the synthesized compounds. However, most of the compounds, that exhibited excellent to moderate anticancer activity, have failed to exhibit good free radical scavenging activity. The docking reports reveal that, newly synthesized compounds docked well to ALK receptor and binding affinity were ranges from -8.35 to -5.44 Kcal/mol. The ADME reports of all the synthesized compounds revealed that, they possess the drug likeness properties. The results obtained in the present study serve as a useful template for the further development of anticancer agents.

Key Words: *Chalcones, Lung Cancer, SRB, DPPH.*

OR/ST2/0030

Synthesis, molecular characteristics, toxicity, biological evaluation, and docking of novel anti-tubercular Succinamide derivatives

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MmaA1 is a methyltrasferase enzyme involved in maturation of mycolic acids in *Mycobacterium tuberculosis*. We used molecular modeling and docking simulation studies to design novel enzyme inhibitor leads containing an aniline and secondary amine connected via succinamide unit. Using succinic anhydride and appropriate substituted anilines and secondary amines a total of 28 target compounds were prepared. The structures were unequivocally confirmed by analyzing their spectral data (IR, NMR and Mass). These compounds were screened for anti-tubercular activity against *M. tuberculosis* H37Rv. Additionally, these are tested for antimicrobial and antifungal activities to further assess their selectivity. The titled compounds exhibited minimum inhibitory concentration (MIC) ranging from 6.16 - >200 µM. Among the tested compound, two succinamide derivatives namely *N*-(2,4-difluorophenyl)-4-oxo-4-(4-phenylpiperazin-1-yl) butanamide and *N*-(2,4-difluorophenyl)-4-oxo-4-(4-benzylpiperazin-1-yl) butanamide exhibited very good anti-tubercular activity (MIC = 6.16 µM). The Osiris online software found that almost all of the compounds had minimal to no toxicity risk associated with them. The docking analysis showed that the catalytic site residues TRP 74, TRP 30, HIS 98, GLY 71, PHE 135, ASP 19 and ALA 137 of MmaA1 protein have consistent interactions with the ligands. The details of design and results will be discussed in the presentation.

Keywords: *MmaA1, Mycobacterium tuberculosis, MABA Assay, Docking Analysis, Succinamides*

OR/ST2/0031

Synthesis and Evaluation of 3-(2-((5-((substituted phenoxy)methyl)-1,3,4-oxadiazol-2-yl)thio)acetyl)-substituted 2-phenylquinazolin-4(3H)-one as Anticonvulsant agent

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Epilepsy is the most common neurological disorder known, affecting around 1 % of the world's population, characterized by recurrent seizure attack. Quinazolines as excellent scaffolds for synthetic manipulations with enormous pharmacological activities. Eleven Substituted Quinazoline analogues viz 3-(2-((5-((substituted phenoxy) methyl)-1,3,4-oxadiazol-2-yl)thio)acetyl)-substituted 2-phenylquinazolin-4(3H)-one was synthesized, characterized and evaluated for their anticonvulsant activity. The structure of the synthesized compounds was established using FTIR, NMR and MS analysis.All compounds were evaluated in mice with the maximal electroshock (MES) seizure and pentylenetetrazol (sc Met) seizure threshold tests for potential anticonvulsant activity and in the rotorod test to evaluate neurotoxicity. Out of Eleven compounds, Compounds 2,4,3 and 9 in the series demonstrated anticonvulsant action. The structure-activity relationship concluded valuable pharmacophoric information, which was confirmed by the molecular docking studies.
The results showed that viz 3-(2-((5-((2chloro phenoxy)methyl)-1,3,4-oxadiazol-2-yl)thio)acetyl)-2-phenylquinazolin-4(3H)-one (Compound4) is the most promising compound

Keywords:*1,3,4-Oxadiazole, Quinazoline, Anti convulsant activity, CHN analysis, NMR*

OR/ST2/0032

Application of QbD Concept in UV-Visible Spectrophotometer and Liquid Chromatography

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Introduction: Analytical Quality by Design (AQbD) concept was introduced in 2004 by the U.S. Food and Drug Administration (FDA) and approved in 2005 by the International Conference on Harmonisation (ICH). 2005 - ICH QbD related drafts include ICH Q8- Pharmaceutical Development, Q9 - Quality Risk Management, Q10- Pharmaceutical Quality System & Q11- Development and Manufacture of Drug Substances.
Aim & objectives: The major objective of AQbD has been to establish robust MODR or ADS within meaningful system suitability criteria and continuous life-cycle management.
Methods: AQbD is a systematic approach to method development, controlling all stages of the analytical procedure life cycle.
Results: It also reduces defects, recalls, and rejects, thus ultimately providing significant saving of resources like time, effort, and cost
Summary & Conclusion: AQbD principle reduces solvent consumption, increases efficiency in the analysis & enhances the system performance in both the chromatography and UV-Visible Spectrophotometry methods. AQbD requires the proper ATP and risk assessment and usage of other right tools like CQA, method optimization and development with DOE etc,. It required a steadfast commitment on the part of the pharmaceutical industry for this approach to succeed. AQbD approach reduces the number of out-of-trend (OOT) results and out-of-specification (OOS) results in an analytical method.
Keywords: *AQbD, MODR, DOE, ICH*

OR/ST2/0033

Design, synthesis and *in silico* studies of 5-substituted-2-iminochromene carbohydrazide derivatives as Pteridine Reductase 1 inhibitors

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Neglected tropical diseases (NTDs) are a set of contagious diseases that are prevalent in tropical and subtropical regions. Leishmaniasis is a widespread NTD found in 98 countries. Out of these, 15 countries majorly contribute to the global burden of leishmaniasis. High rates of mortality and morbidity of Leishmaniasis demands development of new effective scaffolds effective against this disease. With this view the current work comprises of designing and synthesis and *in silico* studies of 5-substituted-2-imino-N'-(substituted benzylidine)-2H-chromene-3-carbohydrazide derivatives as Pteridine Reductase 1 (PTR 1) inhibitors. PTR 1 is an essential enzyme for survival of parasite. The series was designed ans synthesized by hybridization of two effective functionalities namely chromene and hydrazone. *In silico* docking studies were done to check the binding affinity of the compounds against the target enzyme. The scaffold appears to be a good ligand with binding energy better than the original substrate dihydrobiopterin (DHB). Fur ADMET studies and drug likeness studies show the compounds to be good candidates. The series was tested preliminarily for antioxidant activity by DPPH assay followed by *in vitro* anti-leishmanial activity for compounds showing good results for antioxidant activity. Antileishmanial activity was done by studying the cell viability of *L. donovani* promastigotes. IC_{50} obtained from the *in vitro* antileishmanial studies show that chromene-hydrazone hybrid can serve as potential templates for developing new anti-leishmanial agents.
Keywords: *Leishmaniasis, pteridine reductase 1, chromene, hydrazone, in silico studies, anti promastigote activity.*

OR/ST2/0035

Quinazolinone derivatives as prosperative Anticancer agents: Synthesis, Invitro Evaluation on Human Cancer Cell Lines (Caco2, A549 & MCF7) and Molecular docking, In-silico drug likeness studies

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Background: Malignancy is the majority reason of morbidity and mortality with foremost wellbeing trouble universal.

Aim & Objective: In this research, sequence of quinazolinone compounds were designed, synthesized, shaped as cytotoxic agents against human cancer cell lines.

Methodology: All derivatives (1-22) were done molecular docking with the enzyme of EGFR-TK'S (PDB ID:1M17), elucidated by FTIR, C^{13} ^{1}H-NMR, MASS Spectral analysis, evaluated for their in vitro cytotoxicity effects using the MTT assay against three human cancer cell lines (CaCo2,A549,MCF 7) using doxorubicin as the standard drug, were additionally docked into the EGFR active site, binding score using PyRx virtual screening tools of Auto dock vina, visualized by biovia discovery studio. The physicochemical, pharmacokinetic properties were predicted using Swiss ADME, pkCSM tools, ADMET SAR.

Results and discussion: Among the synthesized compounds, especially QSD19, SH3, QSL4 were found to be highly potent against cell lines with IC50 in the range of 13.88 µg -24.54µg against CaCo2 cell line, 15.66µg -24.24 µg against MCF-7 cell line, IC50 in the range of 15.04 µg - 20.19 µg against A549 compared with doxorubicin with IC50 values of 22.67µg, 22.05µg, 23.03µg. Indicated the plausible activities of the synthesized compounds with excellent docked binding score.

Conclusion: The compounds quinazolinone (1-22) showed Prospective against carcinoma cell lines which can be Painstaking as potential lead molecules.

Keywords: *Quinazolinone, MTT Assay, Docking, EGFR-TKs, Synthesis, Autodock vina, human cancer.*

OR/ST2/0038

Design, Docking, Synthesis, and Biological Screening of Novel Pyrazolone Derivatives as Potential Anti-Microbial and Anti-Epileptic Agents

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Epilepsy is a neurological disorder in which brain activity becomes abnormal, causing seizures or periods of unusual behavior, sensations, and sometimes loss of awareness. Even though there are already over two dozen antiepileptic medicines (AEDs) on the market, only around one-third of epileptics can completely avoid seizures while using these drugs. The emergence and spread of drug-resistant pathogens that have acquired new resistance mechanisms, leading to antimicrobial resistance, continue to threaten our ability to treat common infections. As a result, antibiotic resistance has emerged in a number of pathogenic species, along with a corresponding decrease in the efficacy of presently available antibiotics, resulting in antibiotic resistance becoming a worldwide health concern. Pyrazolone is one of the most important heterocyclic pharmacophore and it has a wide range of pharmacological activities. Many works were motivated in this area by the significant pharmacological actions of pyrazolone derivatives. In this current research work, we designed, performed docking studies, and synthesized the best novel pyrazolone derivatives by reacting with different hydrazines. Compounds (1a, 1b, 1c, and 1d) showed moderate antimicrobial activity against different bacterial strains like E. coli, S. aureus, and P. aeruginosa. Compound (2a) showed moderate antiepileptic activity.

Key Words: Pyrazolone, Epilepsy, DNA Gyrase, GABA Receptor Subunit Beta-3, ADMET Properties.

OR/ST2/0039

A Novel Approach using Green Hydrotropic Solubalization Technique for Quantitative Estimation of Saxagliptine Hydrochloride in Pharmaceutical Dosage Form

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High performance liquid chromatography of drugs is usually performed with the help of organic mobile phase like Methanol, Acetonitrile etc., which are toxic and expensive. In the present work ecofriendly, precise, accurate spectrophotometric and RP-HPLC method has been developed and validated for estimation of Saxagliptin HCl using concept of hydrotropy. Hydrotropy is a concept of increasing solubility of a solute in water by adding an agent termed as hydrotropes. This concept reduces the use of organic solvents for analysis of drugs which makes analysis ecofriendly and less expensive. The method was developed using Mixture of 2.5 % sodium acetate and 2.5% tri-sodium citrate as solvent and detected wavelength was 212 nm and linearity range was 10- 50 µg/ml with correlational coefficient of 0.9958 for spectrophotometric and for RP-HPLC 0.5 % sodium acetate as mobile phase and KROMASIL C18 (100 mm x 4.6 mm, 5 µm particle size) as a stationary phase. The flow rate was 0.6 ml/ min and detected wavelength was 225 nm using UV detector. The retention time was 1.23 min and linearity range was 400-1000 µg/ml with correlation coefficient of 0.9933. Developed method was validated according to ICH Q2 (R1) guideline.

Keywords: *Saxagliptin HCl, Hydrotropy, Sodium acetate, Tri-sodium citrate Spectrophotometric, RP-HPLC.*

OR/ST2/0040

IN SILICO STUDIES AND TOXICITY EVALUATION OF PHYTOCHEMICALS AS POTENT INHIBITORS OF DENGUE VIRUS

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Dengue virus is the most emerging virus which causes dengue fever and death all over the world. DENV1, DENV2, DENV3 and DENV4 are the 4 serotypes in dengue virus. There is no specific medical treatment for dengue fever. Current studies shows that there is no effective synthetic medication to treat the dengue fever. Many phytochemicals like Flavonoids, Alkaloids, Polysaccharides, Glycosides and terpenoids from Carica papaya were shown anti dengue activity. Few Phytochemicals are selected and screened using CADD techniques for anti-dengue study. Our study aims to synthesize a novel compound with less side effects and to avoid the severity in the dengue infected patient.

KEY WORDS: *Dengue virus, NS1 Protease, Traditional medicinal plants, Molecular docking, Virtual screening, ADMET, PASS Prediction*

OR/ST2/0041

Synthesis, In-Vitro Screening and Molecular of Novel Benzoxazole-Thiazolidinone Derivatives as Potential Anti-Tubercular Agents

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With an objective of synthesizing some novel potent antitubercular agents, here we have synthesized some novel series of benzoxazole-thiazolidinone derivatives. A novel series of N-(4-0xo-2-substituted phenyl-1,3-thiazolidin-3-yl)-1,3-benzoxazole-5-carboxamide III(a-o) derivatives were synthesized by the reaction between Schiff bases of benzoxazole II (a-o) with thioglycollic acid. Structure of the synthesized compounds were confirmed on the basis of physico-chemical and spectral data (IR, ^{1}H-NMR, ^{13}C-NMR and Mass). All the synthesized compounds were screened for their antitubercular activity using MABA method. Isoniazid was used as standard drug. Among the synthesized compounds **III d, III e, III g, III m,** and **III o** exhibited good anti-tubercular activity. Surflex docking studies have been carried out on all these synthesized compounds as enoyl ACP reductase inhibitors. Surflex docking studies revealed that hydroxy, dimethylamine and nitro group is essential for activity. The results of this study can be further utilized to optimize the compounds in order to improve the potency and selectivity for enoyl ACP reductase by modifying the basic skeleton.

Keywords: *Benzoxazole, Thiazolidinone, anti-tubercular activity, MABA method.*

OR/ST2/0042

New enantioselective liquid chromatography method development and validation of Sitagliptin Phosphate using a Chiral ART Amylose-C Neo column according to USP requirements

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For the sitagliptin phosphate enantiomers, a stability-indicating chiral HPLC method was designed and validated. As per the USP, the degradation behavior of sitagliptin phosphate was measured under various stress conditions. On a Chiral ART Amylose-C Neo (250 X 4.6mm),5µm (YMC, make) column, excellent resolution of sitagliptin phosphate isomers was achieved using a UV detector at a wavelength of 268nm, mobile phase composed of 50:10:40:0.1 percent v/v/v/v blend of ethanol, methanol, n-heptane, and DEA, and a flow rate of 0.8mL/min. The injection volume was 10µL and the column temperature was held constant at 35°C. To examine degradation conditions, API of sitagliptin phosphate was exposed to acidic, alkaline, neutral, thermal, peroxide, hydrolysis, and photolytic environments. The developed approach was linear from 0.75 to 4.5µg/mL, with an r2 value of 0.999. R and S enantiomers were found to have 99-100 percent recoveries. The percent RSD (n=6) and the percentage error were calculated to determine accuracy and precision, both of which were determined to be within acceptable ranges. As an outcome, a new chiral HPLC technique with accuracy, precision, system suitability, specificity, linearity, range, and robustness were designed and validated according to USP guidelines. LOD and LOQ were determined to be 0.159µg/mL and 0.484µg/mL.

Keywords: Sitagliptin phosphate, Enantiomers, Chiral, RP-HPLC, USP, Stability indicating method.

OR/ST2/0043

A Quality based design for method development and validation of Molnupiravir through RP-HPLC

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Molnupiravir is a SARS-CoV-2 compound, and this research aims to determine its identity through a multivariate optimization method that combines reverse-phase liquid chromatography with the AQbD approach. Molnupiravir is an antiviral medication. A silica-based RP-C18 column (100 x 4.6 mm, 4.6) at 40° C and a flow rate of 0.5 ml/min was used in this recently discovered method. Using acetonitrile and ammonium acetate buffers (60:40v/v), pH was adjusted to 4.0 and 240nm wavelength was selected for the HPLC UV-Detector. ICH guidelines were followed when validating this approach. Based on its system suitability test, molnupiravir has a 3.27-minute retention time. There is a correlation coefficient (r2 = 0.9999) between 0.5 - 32g/ml in the linearity range. As a result, 99-99.6% of the sample is recovered. Hence, the intended method proves to be simple and robust.

Key words: AQbD approach, RP-HPLC, Molnupiravir, SARS-CoV-2 molecule

OR/ST2/0044

Development and validation of a RP-HPLC method for the simultaneous determination of Gallic Acid, Ellagic Acid, and Ascorbic Acid in Triphaladi Churna

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Triphaladi churna is a popular Ayurvedic formulation described in the Ashtangaradayam (Ayurvedic literature). The preparation is a composite mixture of the fine powder of fruits of Amla (*Emblica officinalis* Gaertn.), mature fruits of Harde (*Terminalia chebula* Retz.), Behada (*Terminalia bellirica* Roxb.) and roots and stolons of Jesthamadhu (*Glycyrrhiza glabra* Linn.). The use of a reversed phase C18 column eluted with acetonitrile: 0.1% orthophosphoric acid (60:40) mobile phase in a gradient elution method starting with an acetonitrile percentage of 10 to 100 in 30 minutes with a flow rate of 1.0 ml/min. Validation of the method was performed in order to demonstrate its selectivity, accuracy, precision, repeatability, and recovery. All calibration curves showed good linear correlation coefficients (r2>0.997) within the tested ranges. Biomarkers in Triphaladi churna was quantified with respect to gallic acid (4.50%, w/w), ellagic acid (1.85%, w/w), and ascorbic acid (1.64%, w/w). Intra-and inter-day RSDs of retention times and peak areas were less than 1.63%. In conclusion, a method has been developed for the simultaneous quantification of three markers in Triphaladi churna. The RP-HPLC method was simple, precise, and accurate, and it can be used for raw material and formulation quality control.

Keywords: *Triphaladi churna, RP-HPLC, gallic acid, ellagic acid, ascorbic acid.*

OR/ST2/0046

Q-Absorbance ratio and Vierodt's spectrophotometric method for the simultaneous estimation of famotidine and omeprazole

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Famotidine and omeprazole are the drugs used in the treatment of gastrointestinal disorders. The current work is an analytical method for the simultaneous determination of famotidine and omeprazole in the bulk formulation and is based on the Q-absorption method and Vierodt's method. These two methods depend on the isosbestic point and the λmax of one of the two components. The isosbestic point was found to be 295 nm in ethanol. 287nm and 301nm are the λmax of famotidine and omeprazole respectively. The method is validated as per ICH guidelines. The first developed method was the Q-absorbance ratio method, in this method Famotidine shows a linearity range from 4-20µg/ml, and correlation coefficients were found to be 0.9990. Omeprazole shows a linearity range from 2-10µg/ml and the correlation coefficient was found to be 0.9968. The second developed method was the Q absorption ratio method in which the linearity range was similar to the simultaneous equation method and the correlation coefficient of famotidine and omeprazole were found to be 0.9996 and 0.9950 respectively.

Keywords: *Famotidine, omeprazole, Q-absorbance ratio, Vierodt's method, isosbestic point, λmax*

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OR/ST2/0047

Synthesis, Biological activities, and Docking studies of 1,6-Naphthyridine Derivatives

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Naphthyridines are the common name for the heterocyclic compounds with two fused pyridine rings possessing potential pharmacological actions. A series of 1,6 -Naphthyridine derivatives were synthesized and characterized by UV spectroscopy, FT-IR, LCMS, 1H-NMR, and 13C-NMR spectral data. The synthesis was carried out in a series of six steps starting with the amination of 2-methyl nicotinic acid, which later was cyclized to 2-one-1,6-naphthyridine. Further chlorination and cyanation were carried out to yield a 1,6-naphthyridine ring. The oxadiazole ring was introduced to get a potent derivative which is substituted with different aromatic acids to yield target derivatives. All the compounds were evaluated for *in-vitro* anti-inflammatory activity by BSA (Bovine Serum Albumin) denaturation method, and antioxidant activity by DPPH (2,2-Diphenyl-1-picrylhydrazyl) assay method, and anticancer activity by MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] assay. All the synthesized compounds showed better anti-inflammatory activity, four of the compounds exhibited antioxidant properties and the pyridine substituted compound exhibited good anticancer activity compared to all other synthesized derivatives. Molecular docking studies were performed using Autodock Vina 4.0 for respective *in-vitro* activities to outline the molecular interaction with receptors.

Keywords: *1,6-Naphthyridines, Synthesis, Characterization, In-vitro anti-inflammatory activity, Antioxidant activity, Anticancer activity.*

OR/ST2/0049

Evaluation of DHFR Inhibition and Antimicrobial Activity of Some Newly Synthesized Quinazolin-4(3H)-one Scaffold Coupled with Benzylidene and Ethylidene Amino Motifs

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We have attempted to prepare a novel series of 2-pheny-3-substituted quinazolin-4(3H)-ones fused with an azomethine (-CH=N-) connection to Benzylidene and ethylidene motifs. Each of these motifs underwent testing to determine whether it could inhibit *in-vitro* microbial DHFR and the subsequent antimicrobial action. The synthesized 2-phenyl-3-substituted quinazolin-4(3H)-ones were characterized by FT-IR, ^{1}H-NMR, ^{13}C-NMR, ESI-MS and elemental (C, H, N, O and X=halogen) analysis. Results of *in-vitro* microbial DHFR inhibition are compared with the trimethoprim, Agar disc diffusion method was used for *in-vitro* antimicrobial activity, performed against pathogenic Gram-positive and Gram-negative bacteria like *Staphylococcus aereus*, *Bacillus subtilis*, and *Escherichia coli*, *Pseudomonas aeruginosa* respectively, and fungi like *Candida albicans*, and *Aspergillus niger.* Docking analysis of ligands with DHFR (PDB=2W3M) has shown strong hydrophobic binding interaction and confirmed a perfect fit into the active domain of DHFR. Possible antimicrobial activity was induced from microbial DHFR inhibition. Existing standard antibiotics used were gentamycin, ciprofloxacin, and clotrimazole. Compounds with potent antibacterial activity were QI-j, and QII-f (MIC=0.1-0.2µg/mL), and moderately active compounds were QIa-d, QIl-m, QIII-d, and QIIIe-f (MIC=0.5-2.0µg/mL). Compounds exhibited potent antifungal activity were QI-c, QII-b, and QIII-f (MIC=0.1-0.2µg/mL), moderately active compounds were QIc-e, QI-g, QIm-n, QII-d, QIII-b, and QIII-e (MIC=0.5-2.0µg/mL). Particularly test compounds have produced DHFR inhibition in a range of 4-24µM as compared with trimethoprim (IC50=10 µM). Benzylidene and ethylidene moieties attached to the quinazolin-4(3H)-one had contributed to this activity. Present series of substituted quinazolin-4(3H)-ones provide a path for the design and development of newer antimicrobial agents in the treatment of deadly pathogenic infections.

Keywords: *quinazolin-4(3H)-ones, antimicrobial activity, MIC, DHFR, IC50, docking analysis.*

OR/ST2/0051

In silico study of binding Affinity of Anti-tuberculosis drugs on Lipoproteins which involved in the TLR-2/MyD88 pathway: insights from Alphafold Modeling, Homology Modeling, Molecular Docking and ADMET studies

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Tuberculosis is a dangerous disease caused by mycobacterium tuberculosis(Mtb). A total of 4.93 lakh fatalities from TB were estimated in 2020, which is 13% more than in 2019. This is due to drug resistance to TB. In present work was to find the binding affinity of 41 Antitubercular drugs with lipoproteins of Mtb that regulate the TLR2/MyD88 pathway. TLR2 receptors are mainly present on the plasma membrane of the macrophages and dendritic cells. That can identify and activated by the lipoproteins of Mtb. The Lipoproteins like LpqH, LprG and LprA can activate the TLR2/MyD88 pathway, leading to NF-kB activation and apoptosis. NF-kB is involved in regulating the immune response to infection by releasing pro-inflammatory cytokines. These lipoproteins trigger innate immunity and regulate APC functions of dendritic cells and macrophages. In this work, we used Alphafold modeling, Homology modeling and molecular docking studies to find which molecules have a strong binding with the Lipoproteins. The strongly binding ligands may inhibit the TLR2/MyD88 pathway and interfere with apoptosis. Homology modeling can predict the 3D protein structure from its amino acid sequence with more than 30% similarity with the template sequence. If the similarity less than 30% means Alphafold modeling is the robust tool to predict the 3D-protein structure. After modeling the protein, Molecular docking was performed with ligands. Asper the molecular docking results Antitubercular drugs like TBI-166, Q-203, Tiliacorinine and 2'-Nortiliacorinine showed a strong binding affinity with these lipoproteins. So It can affect the innate immunity, apoptosis and TLR2/MyD88 pathway in macrophages.

Keywords: *Anti-tuberculosis drugs, Alphafold Modeling, Homology Modeling, LpqH, LprG and LprA, Molecular Docking, NF-kB, PstS1, TLR-2/MyD88 pathway*

OR/ST2/0052

SYNTHESIS AND ANTICANCER STUDY OF NOVEL SUBSTTUTED APIGENIN DERIVATIVES

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A novel series of apigenin derivatives with benzthiazole were synthesized according to betti reaction. The molecular modification approach was used to enhance therapeutic property, ADME property and solubility of Apigenin. The synthesis of methoxy of Apigenin (compound S) carryout by benzoylation. The chemical structures of the substituted 2-amino benzothiazole of methoxy analog of Apigenin (compound S1-S6) were confirmed using ^{1}H NMR, mass spectroscopy and FTIR. The Log P of all compound shows increasing the lipophilicity due to attachment of 2-amino benzothiazole group at 8^{th} position of methoxy analog of Apigenin and substituted 2-amino benzothiazole. Their in vitro inhibitory activity on breast cancer (MCF-7) cell line was evaluated by the standard methyl thiazole tetrazolium (MTT) method. The result of biological test showed some apigenin derivatives possessed stronger anti-cancer activities than apigenin. Compound S6 showed strongest activity against breast cancer (MCF -7) with IC50 114.87 µg/ ml value of , it was better than doxirubisin (21.14 µg/ ml), which is potential derivatives of apigenin.

Keywords : *Apgenin, Benzthizole, Molecular Hybridization, Anticancer activity, MTT assay*

Abbrevations : IC 50 : Half maximal inhibitory concentration, MCF-7 : Human breast cancer cell line, MTT: 3- (4,5-Dimethylthiiazol-2-yl)-2,5- diphenyl terazolium bromide

OR/ST2/0054

Design, Synthesis, Characterization, Anticancer Activity and Insilico Studies of Novel 1-(5-(substitutedaryl)-3'-(4-fluoro-3-methyl-phenyl)-1'-phenyl-3,4-dihydro-1'H,2H-[3,4'-bipyrazol]-2-yl)-2-(isoquinolin-8-yloxy) ethanone.

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Pyrazoline derivatives were found to possess a broad spectrum of activity extending from central nervous system activity to antimicrobial applications. Hence Novel 1-(5-(substitutedaryl)-3'-(4-fluoro-3-methyl-phenyl)-1'-phenyl-3,4-dihydro-1'H,2H-[3,4'-bipyrazol]-2-yl)-2-(isoquinolin-8-yloxy) ethanone were designed and synthesized. The synthesized compounds were characterized by FT-IR, ^{1}H-NMR, Mass spectroscopy and bases of elemental analysis. These compounds were screened against morphological behavior of A549 and MCF-7 Cell lines usnig MTT cell viability assay. From the study, it was revealed that the compounds substituted with electron releasing groups (hydroxy, chloro and bromo) at para position to the attached phenyl ring exhibited potent activity. Further docking studies were performed to predict the interactions of the target compounds within the X-ray crystal structure of JAK2 in complex with a potent quinoxaline inhibitor (PDB: 3KRR), having resolution 1.8 Å. In addition, drug-likeness score and molecular properties responsible for a good pharmacokinetic profile were calculated by Osiris property explorer and Molinspiration online toolkit, respectively. From the results, it was revealed that the synthesized compounds with halogen substitutions showed the most potent activity compared to that of standard drug.

Keywords: *Pyrazoline, Anticancer activity, Insilico studies, MTT cell viability assay, Druglikeness.*

OR/ST2/0055

Simultaneous Estimation and Stability Indicating RP HPLC Method Development and Validation for Daunorubicin & Cytarabine in Solid Dosage Form

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Daunorubicin and Cytarabine are antineoplastic agents used in chemotherapy. In the present research work a method was developed using RP-HPLC in a standard and accurate form to estimate these combination drugs in bulk tablet dosage form. A column of STD AGILENT 150 X 4.6 mm,5 was used in the method, which consisted of a mobile phase (KH2PO4: Acetonitrile of 50:50), and they ran at the flow rate of 1.0ml Daunorubicin and Cytarabine have different retention times of 2.255 and 2.963 minutes, respectively. Daunorubicin and Cytarabine have RSDs of 0.9 and 0.6, respectively. a percentage Daunorubicin and Cytarabine had recovery rates of 100.15 percent and 100.42 percent, respectively. The Limit of Detection and Limit of Quantification values obtained from Daunorubicin and Cytarabine regression models were 0.21, 0.64, and 0.45, 1.35, respectively, a percentage for Daunorubicin and Cytarabine, the assay yielded 100.12 percent and 100.42 percent, respectively. Daunorubicin's regression equation is y = 37361x + 4337, while Cytarabine's is y = 41833x + 24623. Hence it can be concluded that the proposed method was a good approach for obtaining reliable results and can be used as a quality-control tool for routine analysis of Daunorubicin and Cytarabine.

Key words: *Daunorubicin, Cytarabine, RP-HPLC.*

OR/ST2/0058

Synthesis and Anticancer Activity of Novel Mannich Base of Benzimidazole Derivatives Against Neuroblastoma Cell line

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Many currently available drugs are resistant to cancer chemotherapy. The present study is to synthesize a novel mannich bases of benzimidazole derivatives and to screen anticancer activity by MTT assay in neuroblastoma cell line. 2-phenyl benzimidazole, formaldehyde and substituted benzylamine (4-methoxy, 4-methyl, 4-chloro, 2-chloro, 4-fluoro, 3-methoxy, 3,4-dichloro, 4-trifluoro methyl) were used to synthesize mannich bases of (3r, 5r, 7r) N-(substituted)-N-((2-phenyl-1H-benzo[d]imidazol-1-yl) methyl) adamantine-1-carboxamide. MTT cell viability assay was performed to determine the half maximal inhibitory concentration (IC_{50}) of synthesized compounds. Toxicity of test compounds in cell was assessed based on mitochondrial dehydrogenases. Neuroblastoma (SK-N-MC) exposed to mannich base at different concentration of 6.25 µg/ml, 12.5 µg/ml, 25 µg/ml, 50 µg/ml and 100 µg/ml compared with standard drug. The IC_{50} value of 4-methoxy mannich base derivative was found to be 74.64 µg/ml. IC_{50} value of other substituents of mannich base such as 4-methyl derivative, 4-chloro derivative, 2-chloro derivative, 4-fluoro derivative, 3-methoxy derivative, 3,4-dichloro derivative and 4-trifluoro methyl derivatives were found to be 34.08 µg/ml, 27.29 µg/ml, 25.88 µg/ml, 33.11 µg/ml, 52.91 µg/ml, 44.80 µg/ml and 30.87 µg/ml respectively. Among the electron withdrawing and electron donating substituents on mannich bases, 2-chloro substitution possessed highest anticancer activity, whereas 4-methoxy mannich base derivative showed least anticancer activity against neuroblastoma cell line.

Keywords: *Heterocyclic, Condensation, Cytotoxicity, Tumor.*

OR/ST2/0061

BIOANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE ESTIMATION OF HYDROXYPROLINE IN URINE SAMPLES OF OSTEOARTHRITIC PATIENTS USING LC-MS/MS TECHNIQUE

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Osteoarthritis is one of the most common disorders that has become prevalent in the older population. Every two individuals in a group of ten suffers from osteoarthritis. It is a disorder of the synovial joints where the degradation of articular cartilage due to various metabolic changes leads to gradual erosion of the bone, thus, leading to weakening of the joints.

Hydroxyproline is the most copious component of cartilage matrix. It renders stability to cartilage, which may undergo corrosion and release high amounts of hydroxyproline in body fluids, especially liver, where it gets metabolised and eventually gets excreted through urine. Hence, hydroxyproline is considered as an effective biomarker for degree of cartilage erosion and can help to understand the severity of the ailment.

A highly responsive LC-MS/MS method was developed for the effective estimation of hydroxyproline in urine samples collected from osteoarthritic patients. The chromatographic separation was carried out with the help of a 5µm CN column (4.6 x 150 mm) by using 0.3% formic acid: ACN as mobile phases in low pressure gradient mode. The method was proceeded at a flow rate of 0.5 ml/min by maintaining the column temperature at 50°C and setting injection volume as 10µl. The developed bioanalytical method was further validated according to ICH M10 guidelines. The method was found to be accurate and precise with % recovery of more than 70% and % RSD of less than 2. It established a linear relationship between peak area and concentration range of 10ng-320ng/ml. Furthermore, the method was highly selective as well as sensitive as it showed no interference of peaks and gave results within limits for sensitivity. The method was proven to be stable as recovered concentration for each stability test was found to be 98%.

The developed bioanalytical method was, thus, proven to be efficient and reliable for estimation of hydroxyproline in urine samples.

OR/ST2/0062

A GC-MS phytochemical investigation and cytotoxic profile of hydroalcoholic extract of *Rosemary officinalis* Linn. against human bone cancer cell, MG-63

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There is always a significant claim to discovering new cytotoxic drug leads from natural sources, and *Rosmarinus officinalis* (RO) Linn, of the Lamiaceae family, is one of them. *R. officinalis* is a well-studied cytotoxic drug that has attracted the attention of the scientific community due to its favorable effects on grave illnesses in humans, such as cancer. The aim of our study is focused to GC-MS phytochemical analysis of bioassay-guided fractions of *R. officinalis and to study the* cytotoxic profile of hydroalcoholic (HA) extract against human bone cancer cell line, MG-63. The phytochemical investigation via GC-MS confirmed the terpenoids and volatile oil contents present in it. The HA extract comprising the total terpenoids was evaluated for *in-vitro* cytotoxicity activity against human bone cancer cells, MG-63, using an MTT assay and cell cycle analysis by flow cytometry. The result of the *in-vitro* cytotoxicity study showed an IC_{50} value of 43.37 µg/ml, which shows the HA extract is cytotoxic at a minimum concentration. Whereas, the result of cell cycle analysis revealed the cell arrest at a G0/G1 phase for control (91.23%), and further confirmed that the HA extract was apoptotic (72.11%). These findings revealed that HA extract of *R. officinalis* increased cytotoxicity and cell cycle arrest, and thus it might be a potent anti-cancer component. The relationship between the phytochemical structural analysis of this extract and its bioactivities is discussed. However, further study is required to know the complete mechanism of these extracts on their anticancer potential against bone cancer cells.

Keywords: *Rosemary officinalis, Hydroalcoholic Extract, GC-MS, Cytotoxicity, Human bone cancer cell, MG-63.*

OR/ST2/0064

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF RALOXIFENE HYDROCHLORIDE BY RP-HPLC

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Raloxifene is a medicine used in the treatment of osteoporosis in postmenopausal women. It helps in preventing bone loss that can develop in women after menopause. An accurate, fast, simple and cost effective RP-HPLC techniques for detecting of Raloxifene HCL was developed. The RP-HPLC method is developed by using ACN and Millipore water with 0.1% OPA 50:50 v/v as MP for Raloxifene HCL. Flow rate is maintained at 0.5mL/minute respectively. Detection of Raloxifene HCL was performed by using UV detector at 287nm respectively.
By this proposed method RT of Raloxifene HCL was identified at 2.9 min respectively. Raloxifene HCL response is linear at a rang e of 10 to 60µg/ml of working concentratio nThe RSD calculated must be ≤ 2.0%.The L OD and LOQ for the RP-HPLC method were identified by using calibration standards. Th e LOD and LOQ for Raloxifene HCL are 1.5 and 10µg/ml respectively. Many patients are found to suffer from Osteoporosis. The proposed method is used for the routine Quality control. The proposed method for the detection of Raloxifene HCl was been validated as per ICH guidelines and it was proven to be accurate, linear, robust, and specific

Key words: UV detector, RP-HPLC method, Raloxifene HCL, Selective Estrogen Receptor Modulators (SERMs)

OR/ST2/0065

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR QUANTIFICATION OF SORAFENIB TOSYLATE LOADED SOLID LIPID NANOPARTICLES

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The purpose of this study was to design an RP-HPLC system that was efficient, sensitive, selective, accurate, and realistic. A UV detection method for the determination of Sorafenib tosylate loaded solid Lipid Nanoparticles has been developed and validated for this purpose. The different parameters were used to optimise the method (pH and Column). A C_8 short column (5 µm 4.6 x 100 mm) used for the chromatographic separation using a Shimadzu prominence-i LC-2030C Methanol:0.1% Formic acid in water is used as the mobile phase, with a 10 minute runtime and a 10µL injection volume at 1 mL/min flow rate A UV detector was used to detect the effluent at 261nm.
The developed analytical method has a linearity range of 1-64g/ml and an R2 value of 0.998. 0.88 µg/ml detection limit (LOD) and 1.0 µg/ml limit of quantification (LOQ) and drug entrapment efficiency (DEE) and drug loading (DL) for ST from the extracted SLNs matrix were found to be 86.9% and 19%, respectively. The proposed approach was assessed by using ICH Q2(R1) guidelines and it was proven to be accurate, linear, robust, and specific. Drug release, drug loading, and drug entrapment efficiency were all examined using the developed analytical approach.

Keywords: Sorafenib tosylate, RP-HPLC, Solid Lipid Nanoparticles (SLNs), UV detection.

OR/ST2/0067

Design, Synthesis and Antimicrobial study of 4-[(3, 5-chloro-substitued-diphenyl-4, 5-dihydro-1*H*-pyrazol-1-yl) carbonyl] pyridine derivatives.

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Synthesis of novel antimicrobial agents has always been a challenge for researchers as emerging infectious diseases and increasing number of resistant microbial pathogens. Among the antimicrobial agents, the most of work is been carried out on heterocyclic compounds bearing pyrazoline moiety. An attempt was made in the present studies to synthesis a series of 4-[(3, 5-chloro-substitued-diphenyl-4, 5-dihydro-1*H*-pyrazol-1-yl) carbonyl] pyridine derivatives and evaluate for their antibacterial and antifungal activities. 4-[(3, 5-chloro-substitued-diphenyl-4, 5-dihydro-1*H*-pyrazol-1-yl) carbonyl] pyridine derivatives were synthesized by treating chloro-substituted chalcones with isoniazid. Chloro-substituted chalcones were synthesized by treating chloro-substituted acetophenone with chloro-substituted benzaldehyde. The structures of the synthesized compound have been established on the basis of IR and ^{1}HNMR data. The synthesized compounds have shown moderate antibacterial and antifungal activity.
Keywords: *Chalcones, Isoniazid, Pyrazoline, Antibacterial, Antifungal activity.*

OR/ST2/0068

Emerging therapeutic potentials of dual –acting HER2 and EGFR inhibitors Targeting Breast Cancer

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To synthesis novel pyrazolone fused thiazolidinone analogues and evaluate their efficiency as potent HER2 and EGFR inhibitors in human breast adenocarcinoma cells for anti-cancer activity. In this research, several thiazolidinone joined with pyrazolone analogues have been synthesised, characterised by infra red spectra, elemental analysis, IR, ^{1}H &^{13}C nuclear magnetic resonance, Mass spectroscopy and tested in vitro for cytotoxicity against the MCF-7 cell line using the MTT assay. A correlation study of the cytotoxicity was performed to the Docking score done by using Schrodinger (Maestro) Version 9.6 Glide XP software. Based on docking scores (-6.614) and IC_{50} values (001.17 M) obtained for the synthesized B series (4B1- 4B10), 4B5 exhibited potent cytotoxicity against MCF-7 cells. It has been demonstrated that novel pyrazolone fused thiazolidinone analogues were incorporated and portrayed in this study have hostile to malignant growth activity against MCF-7 cell line. This could of Novel anti-breast cancer drugs are being developed as a result of this research potentially.
Key words: *Pyrazolone, Thiazolidinone scaffolds, HER2, EFGR inhibitors, GLIDE XP, MCF-7 cell line.*

OR/ST2/0069

Development and validation of a sensitive LC-MS/MS technique for pioglitazone vs surface modified pioglitazone nanoparticles: application to pharmacokinetic and tissue distribution studies in rats

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The current study developed and validated a sensitive LC-MS/MS technique for measuring pioglitazone (PGZ) and surface modified PGZ-NPs concentrations in rat plasma and tissues. Using a YMC Pro C18 column (100 mm x 4.6 mm, 3µ) with a mobile phase of formic acid (0.1% v/v) and acetonitrile (5: 95) at a flow rate of 0.7 mL min^{-1} and injection volume of 10 µL, the chromatographic separation was obtained (IS : rosiglitazone). Mass spectrometric detection was accomplished with triple quadrupole mass spectrometry and the ESI interface in positive ionisation mode. The developed method was validated throughout a linearity range for Naïve PGZ and $_{P}$PGZ-NPs of 1-500 $ngmL^{-1}$ and with detection and lower quantification limits of 0.5 ng mL^{-1} and 1 ng mL^{-1} respectively. The method accuracy ranged from 95.89-98.78% (inter-day) to 93.39-97.68% (intra-day), with precision ranging from 6.09-8.12% (inter-day) to 7.55-9.87% (intra-day). The developed method approach was utilised successfully to assess the pharmacokinetics and tissue distribution of PGZ. Further, the developed method was successfully used to validate target organ (adipose tissue) specific surface modified PGZ-NPs distribution in addition to naïve drug.

Keywords: *Pioglitazone, Surface modified PGZ, liquid chromatography-tandem mass spectrometry; Pharmacokinetic studies, tissue distribution studies*

OR/ST2/0070

Protein Modelling and Conformational Analysis of Mortalin-p53 Proteins by Homology Modelling & Protein-Protein Interaction Studies

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Abstract: In colorectal cancer and hepatocellular carcinoma, mitochondrial heat shock protein-mortalin localizes itself in the cytoplasm only in case of overexpression, where it binds natural tumour suppressor protein p53 and blocks the actions of p53 in the nucleus.
As the complete protein structure of mortalin and p53 is unavailable in the protein databank (PDB) hence, there is a need for homology modelling of these proteins. Further, protein-protein interaction study of these proteins can provide insight into possible binding sites for its abrogation. The proteins' full-length crystal structures are unavailable as a part of preliminary studies; hence, we built mortalin and p53 proteins by multi-template homology modeling using Modeller10.1. The generated model was verified using various free software and stabilized by MD simulation study. The Mortalin-p53 interaction study was carried out using Cluspro 2.0 software developed by Boston University and validated by CAPRI team. The generated top model with the best Cluster score was selected, and interactions were visualized using PDBsum webserver. The modelled mortalin and p53 proteins were found to have Ramachandran favored regions of 95.6% and 94.4% respectively, which remains in the acceptable region for modelled proteins. The models were stabilized using MD simulation which proves that the modeled proteins remain stable in the body environment. Protein-protein interaction study suggests p53 forms 41 hydrogen bonds, 6 ionic bonds, and 320 non-bonded interactions with mortalin.
The protein-protein interaction study of mortalin and p53 interactions provide the base for designing molecules that abrogate these protein interactions in the cytoplasm. Further, it helps in the exploration of new effective binding pockets for the same.

Keywords: *Mortalin and p53 interactions, MD simulation, homology modelling, colorectal cancer and hepatocellular carcinoma*

OR/ST2/0072

Molecular Design and In-silico Analysis of Trisubstituted Benzimidazole Derivatives as *Mycobacterium tuberculosis* Filament temperature sensitive ring- Z (MtbFtsZ) Inhibitor

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Tuberculosis is the fastest spreading infectious disease and one of the top ten diseases that kill millions of people annually. The rapid spread of a multidrug-resistant strain of *Mycobacterium tuberculosis* leads to Multidrug-Resistance Tuberculosis (MDR-TB), which is very difficult to treat. MtbFtsz protein could be the best target to inhibit bacterial cytokinesis. This research is conducted to predict the anti-tubercular activity of trisubstituted benzimidazole derivatives targeting MtbFtsZ protein by an in-silico approach (molecular docking, pharmacokinetic parameter, drug likeliness, and toxicity prediction analysis). Amine and aldehyde substitutions are used as primary scaffolds to design 21 trisubstituted benzimidazole derivatives for molecular docking. AutoDock vina v.1.2.0 software was used to predict the binding interaction between ligand and receptor (MtbFtsZ, PDB ID: 1RQ7). The drug likeliness properties and toxicity of ligands were predicted from SwissADMET and ToxiM web servers respectively. Compound A15 showed the best binding energy (ΔG = -10.2 kcal/mol/) along with three hydrogen bond interactions (GLY107, PHE180, ASP 184). It is found that the binding energy of all ligands (ΔG = -8.0 to -10.2 kcal/mol) is better than the reference compound Moxifloxacin (ΔG =-7.7 kcal/mol). None of the ligands violate Lipinski's rule but the toxicity of most of the ligands is high (> 0.8 score). It is reported that the amine substituted benzimidazole derivatives have better binding energy than the aldehyde substitution. Therefore, it is concluded that compounds A15 can be the best candidate as MtbFtsz protein inhibitors but an in-vitro animal study and toxicity study is necessary to validate these data.

Keywords: *Benzimidazole, tuberculosis, molecular docking, MtbFtsz,*

OR/ST2/0074

Docking and ADME Studies of Thienopyrimidine Substituted Molecules on Colorectal Cancer

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Colorectal cancer (CRC) is one of the leading cancer diseases, with 8% of death caused due to CRC worldwide. There are many pathways associated with the development of CRC and in that the Wnt/β-catenin pathway protein, which plays a major role in cell proliferation, is selected for the docking studies. Wnt protein binds to the receptor and causes accumulation of β-catenin in the cytosol. Thienopyrimidines are the fused pyrimidines and the five-membered hetero aromatic ring, which are the structural analog of biogenic purine. Thienopyrimidines are substituted with N-methyl piperazine and various anilines. The main focus of the article is to inhibit the Wnt protein to bind to the receptor using thienopyrimidine molecules by an insilico approach (molecular docking, pharmacokinetics). The Wnt protein (PDB ID-4a0p) as a receptor and substituted thienopyrimidine molecules as a ligand are docked using PyRx software. The drug likeliness property is predicted by SwissADME. Based on the scoring function obtained by docking, the ligand A-2 is showing the highest binding energy of -9.0 Kcal/mol compared to the standard Bevacizumab Avastin -7.9Kcal/mol. Compounds A-4, A-7, A-8, A-17, and A-19 are also the best candidates and are not violating the criteria of Lipinski's rule and ADME properties. These results indicated that thienopyrimidine derivatives could be one of the leads for the treatment of colon cancer.

Keywords: Colorectal Cancer, Wnt β-catenin, Thienopyrimidine, Molecular Docking, Drug likeliness, ADMET

OR/ST2/0075

Review of organometallic complexes as anticancer agents

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Cancer is one of the deadliest diseases leading to the maximum number of deaths worldwide, second only to deaths resulting from cardiovascular diseases. It is an abnormal and uncontrolled cell growth resulting from a lack of apoptosis and may develop in any part of the body. Cisplatin, a cis-isomer of Diamminedichloroplatinum(II) synthesized by Michelle Peyrone was accidentally discovered by Barnet Rosenberg as an anti-tumour agent. It is generally accepted that Cisplatin and its derivatives which are used in the treatment of nearly half of the patients suffering from various cancer lines target deoxyribonucleic acid (DNA), which is an essential constituent of all cells and hence cannot discriminate between normal and malignant cells resulting in severe adverse side effects. Hence the search for alternative drugs having greater selectivity and cytotoxicity toward cancerous cells and causing fewer adverse side effects to the normal cells is highly required. In this context, organometallic complexes in which an organic ligand is bonded to a metal atom or ion by one or more coordinate bond(s) are found to be highly promising anti-tumour agents. Other than DNA, these complexes are believed to target proteins and enzymes and show biological activity through various pathways. Many transition metals are used to make such complexes and their anticancer activity is being evaluated. Due to their thermodynamic and kinetic stabilities, and potentiality for selectivity toward malignant cells, organometallics are considered 'prodrugs' and are of great interest in the field of bioinorganic medicinal chemistry for developing these species as promising anticancer agents.

Keywords: *cancer, apoptosis, organometallics, transition metals, prodrugs*

OR/ST2/0076

Rational Design, in silico Molecular docking studies and ADMET predictions on novel quinazolin-4(3H)-one derivatives

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Convulsions are primarily caused by the GABA-A subunit of the GABA (Gamma amino butyric acid) receptor; therefore, antagonists of the GABA-A receptor can have anticonvulsant effects. We designed 40 novel 2-substituted-3-(phenyl *p*-substituted) quinazolin-4(3*H*)-one derivatives and screened them using in silico approaches like molecular docking studies against GABA-A receptor (PDB id: 6X3W) by using discovery studio software to evaluate their binding affinities in order to qualitatively explain their anti-convulsant activity as well as ADME (absorption, distribution, metabolism, excretion) and Toxicity prediction. Out of 40 compounds 8 compounds (1a, 1b, 2a, 2b, 2e, 3a, 4a and 4e) shows the best binding affinity compared with standard drug. The ADMET predictions shows that the compounds have good plasma protein binding (PPB) affinity, low hepatotoxicity and non-carcinogenic.

Key words: *GABA, ADMET, Molecular docking, Binding affinity, Hepatotoxicity.*

OR/ST2/0080

Analog-based Design and Development of Novel Molecules as anti-tubercular agents

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Tuberculosis (TB) is a most rampant disease of the world over the ages of human history. The burden of Tuberculosis (TB) is immense due to the development of resistance by *Mycobacterium tuberculosis* (Mtb). This issue can be addressed by developing new drugs having novel mechanism of action. GSK 2556286 (GSK-286) is a Phase 1 clinical candidate with a novel mechanism of action related to cholesterol catabolism, hence it was selected as template/parent molecules for our analog based drug design strategy. The designed molecules are initially checked to be drug-like using 'Lipinski's rule of five'. Among the developed compounds, **3a & 7a** were found to be promising against *Mtb H37Rv* at MIC of 3.125 µg/ml. They were also effective against *S. aureus* and *E. coli* at MIC of 0.98 and 7.81 µg/ml, respectively. Docking was performed against HsaA monooxygenase (3AFF) and the molecules **3a & 7a** produced good docking score of -9.2 & -9.3 kcal/mol respectively. The docking result was found in correlation with the anti-tubercular activity. The compounds were further marked safe against mammalian VERO cells at CC_{50} > 90 µg/ml. The profound anti-tubercular activity with concomitant safety against mammalian VERO cells could pave new vista in the discovery of anti-tubercular drugs.

Key words: *Analog-based Design; Anti-tubercular activity; Docking; GSK 2556286; VERO cells*

OR/ST2/0081

Synthesis of HIF-1α mimetics for diabetic wound healing therapy; A combined *in-silico, in-vitro* & *in-vivo* approach

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Hypoxia-inducible factor 1 alpha (HIF-1α) is a key regulator of wound healing, which includes epithelialization, angiogenesis, granulation tissue development, and wound contraction. Even though diabetic wounds are hypoxic, HIF-1α levels are decreased during healing. Diabetic wound healing necessitates the modulation of hypoxia-induced responses by VHL–HIF-1 protein-protein inhibition. Our proposed hypothesis is to increase HIF-1α levels by inhibiting VHL and HIF-1α interactions by novel small bioactive molecules which would accelerate diabetic wound healing. A three features (Two Aromatic rings and One hydrogen bond acceptor) pharmacophore hypothesis was generated from the existing HIF alpha modulators. Virtual screening was done based on the generated pharmacophore, and a library consisting of the top 20 out of 3728 compounds was selected using ZINCPharmer. Of the top 20 molecules, the Pyrazole analog was identified as the top "HIT". Five analogs of pyrazole were designed and the novelty was ascertained by Scifinder. The designed compounds were synthesized and characterized by IR, Mass, and NMR. Preliminarily, we have a scratch wound assay using 3T3L1 cell lines. All the synthesized compounds showed significant wound healing activity. Further to validate the *in-vitro* assay, the compound CI which showed a significant in-vitro assay was carried out for the *in-vivo* study. Using diabetes mouse models, comprising streptozotocin-induced (STZ) diabetic mice and scratch wound assays, we demonstrated that inhibiting the VHL and HIF-1α connection is a promising strategy for treating diabetic ulcers. Molecules CI and CP were found to have substantial *in-silico*, *in-vitro*, and *in-vivo* outcomes.

Keywords: Diabetic wound healing, HIF-1α, pyrazole, angiogenesis, pharmacophore, virtual screening

OR/ST3/001

Identification and characterization of novel Chondroitinase producing bacteria

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Abstract: Chondroitinase (ChABC), a bacterial enzyme obtained from Proteus vulgaris, has promising therapeutic potential in spinal cord injury and various other neurological disorders. It catalyzes the degradation of chondroitin sulfate side chains of proteoglycan molecules in the CNS extracellular matrix and enables CNS repair. However, the yield of ChABC is low and further limited by its high instability. Therefore, identification of ChABC-producing isolates with high productivity thermal and pH stability, and enhanced specificity is very important. A systematic screening of poultry soil samples yielded eight isolates having significant chondroitinase activity. Among these, one isolate exhibited high chondroitinase activity, which was higher than the standard, Proteus vulgaris. Further characterization and identification of screened isolate revealed to be novel Bacillus species. The molecular weight of the purified enzyme is around 70 kDa, which corresponds to the molecular weight of chondroitinase AC. The purified chondroitinase AC was subjected to in vitro cytotoxicity studies on Vero and MCF-7 cell lines. The MTT assay results showed IC-50 values of 56.25µg/ml and 52.5 µg/ml on Vero and MCF-7 cell lines respectively. Further work on enzyme characterization is in progress.

Key words: Chondroitinase AC, Bacillus species, Poultry soil, cytotoxicity

OR/ST3/002

PREPARATION AND EVALUATION OF POLYHERBAL CREAM OF THE COMBINED EXTRACT OF AEGLE MARMELOS, ACALYPHA INDICA AND TRIDAX PROCUMBENS FOR THE TREATMENT OF SKIN DISEASE

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Abstract: Antimicrobial resistance and Side effect of steroids was major concern on Topical preparation for skin disease and infection like eczema, impetigo skin damage etc. Conventionally many natural plants have good antimicrobial and wound healing activity. Various research shows that Tridax procumbes Aegle marmellos and Acalypha Indica show good antibacterial, anti-inflammatory and wound healing activity. Our aim was to prepare and evaluate the polyherbal formulation of three plants and screened for antibacterial activity. The Aegle marmelos studied for antibacterial activity against the bacteria causing infections and increased incidence of resistance against Bacillus subtilis and Staphylococcus aureus. Based on results extracts are formulated in to cream with suitable base for skin infections. The combined extract was optimized with base and formulated herbal cream. The formulated cream was evaluated with all parameters such as colour, spreadability, irritancy, microbial growth, odour, homogenity, pH, washability, texture. Antibacterial activity was done by disc diffusion assay and formulated cream of different concentration was compared with standard drug streptomycin. The zone of inhibition of Bacillus substilis and Staphylococcus aerus. was found to be 12 and 10 Cm with respect to higher concentration of formulation drug and was comparable with standard drug streptomycin. Our cream formulation shows good diffusion properties which was evidenced by antibacterial activity of cream formulation with similar effect given by extracts. This cream formulation offers good antimicrobial, anti-inflammatory and wound healing activity and effective treatment and alternative for steroid preparation and also effective for resistant organism in skin infections. methanol extract of Tridax procumbens and Acalypha indica and

KEYWORDS: Tridax procumbes Aegle marmellos, Acalypha Indica, Bacillus substilis, Staphylococcus aerus

OR/ST3/004

Phytochemical Screening and Antibacterial Evaluation of Manilkara Hexandra

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Abstract: Manilkara Hexandra is an herbal plant with a huge medicinal use. It belong to family Sapotaceae it is native to India mainly distributed as a wide tree in the southern part and north-central part of India. It is widely spread in Gujarat, Rajasthan, Kerala and Maharashtra our efforts are to collect valuable information with respect to morphology, microscopy, phytoconstituents and pharmacological aspect of the plant. The aim of the study was to analyze anti-bacterial activity of leaves and bark extracts of manilkara hexandra. The preliminary morphological, microscopical & phytochemicals screening was performed on manilkara hexandra to confirm the presence of phenols, flavnoid, saponin, carbohydrate, alkaloids and glycoside. Then TLC was carried to check the various constituents' presence in the plant using specific marker. Then it was evaluate on various extract of manilkara hexandra using gram-positive bacteria and gram negative bacteria for anti-bacterial activity by agar disc diffusion method and further it was compared with reference compound to determine the potency of different extracts of manilkara hexandra. The activity was performed using the agar disc diffusion method at 250 and 500 µg/disc of concentrations. The methanolic extract exhibited maximum antimicrobial potency against reference compound.

Key Words: Manilkara Hexandara, TLC, Agar – diffusion, alcoholic extracts

OR/ST3/005

Development and Clinical Investigation of Herbal Formulation for Management of Haemorrhoidal Disease

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The haemorrhoidal disease is one of the most common anorectal conditions and about 50% of the population would have haemorrhoids at some point in their life. It is more prevailing in India especially in population of current generation because of bad eating habits of spicy junk food. Approaches including dietary and lifestyle modifications, medical management, non-surgical and surgical management are used to manage this disease. Standard treatment of choice is not available except surgery that is painful with chances of reoccurrence. Present study was undertaken to develop and clinically investigate a patient friendly, stable and standardized unit dose herbal formulation for the management of haemorrhoidal disease. Phyllanthus niruri was investigated for the treatment of haemorrhoidal disease. Preformulation study were performed for the Phyllanthus niruri whole plant powder. The plant powder had accepted flowability and compressibility for ease of filling the capsules without creating weight variation issues. Hard HPMC vegetable capsules containing 500 mg plant powder were prepared as per the standard procedure and evaluated for weight variation and disintegration. To check the clinical efficacy of the developed herbal formulation, observational clinical study was undertaken as per the approved study protocol. The product was found very effective in reducing the symptoms of mild to moderate cases of haemorrhoidal disease very rapidly in 50 patients evaluated. The research will be further extended to identify the marker components for the medicinal effect observed with a scope of approval from regulatory authority for marketing the product for management and treatment of haemorrhoidal disease.

Keywords: Herbal formulation, haemorrhoidal disease, clinical investigation, Phyllanthus niruri.

OR/ST3/006

Formulation and evaluation of liposome loaded with tulsi oil and citronella oil for antimicrobial activity

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The essential oil exhibits antimicrobial activity, but because of its sensitivity to light and high volatility, it can be difficult to use in clinical studies. Vesicular systems are a valuable approach to enhancing their biopharmaceutical characteristics. This study focuses on the growth of benefits of combining oils of Cymbopogon winterianus (Citronella oil) with Ocimum basilicum (Tulsi oil) liposomes include improved performance, improved stability, and increased solubility of its contents. The thin-film hydration technique was used to develop liposomes. The Citronella oil (CO) and Tulsi oil (TO)-loaded liposomes were prepared and characterized using particle size, polydispersity index (PDI), and zeta potential, and entrapment efficiency. The optimized batch was characterized by FT-IR, SEM, in-vitro release studies and antimicrobial activity. The optimized liposome formulation exhibited particle size about 231.8± 37.4 nm with zeta potential -13.5± 1.21 mV and PDI was about 0.296 ± 0.076. The entrapment efficiency (EE%) of optimised batch was found to be 98.73± 0.5 %. Particle size, PDI, zeta potential, and entrapment efficiency were used to examine the stability of improved batch lyophilized liposomes. It demonstrated good stability in a light-avoiding environment at 4°C, according to preliminary stability investigations, with a steady particles size, good zeta potential, and no changes in entrapment efficiency. Using liposomes as nanoscale carrier increased the efficacy of the antimicrobial activity of Citronella oil (CO) and Tulsi oil (TO) oil by twice than unloaded plain oil when tested against microbial strains .Thus encapsulation of the antimicrobial materials into liposomes enhances their action and diminishes the required concentration to give its preferred actions. The liposomes loaded with Citronella oil (CO) and Tulsi oil (TO) also possess significant antimicrobial activity.

Keywords: Essentials oil; Cymbopogon winterianus (Citronella oil) and Ocimum basilicum (Tulsi oil); liposome; thin-film Hydration, antimicrobial activity

OR/ST3/007

STANDARDIZATION OF AN AYURVEDIC POLYHERBAL FORMULATION OF GOKSHURADI CHURNA

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The knowledge of plant based medicines was gradually developed by the primeval persons and was passed on to generations by trial and error basis without proper scientific evaluation, and toxicological studies. The discovery and acceptance of traditional therapies in the past decades has been increasing all over the countries. Consumers buy plant based products without a prescription through online. Thus standardization is necessary with systematic approach and well-designed methodologies to maintain uniformity between batches during production of herbal products. The study aims to standardize polyherbal formulations of Gokshuradi churna (GC) I and II prepared at summer and winter season respectively with same ingredients. It is an ayurvedic formulation prescribed for inflammation, arthritis, and other joint disorders. GC I and II consists of powdered mixture of six herbal drugs in equal proportions: the fruits of Tribulus terrestris, the fruits of Terminalia chebula, the root of Boerhaavia diffusa, the wood of Cedrus deodara, the rhizome of Zingiber officinale, and the bulb of Allium sativum. The churna was procured and standardized on the basis of the parameters like organoleptic characters, physical characters, physicochemical properties, phytochemical screening, heavy metal analysis by ICP-OES method, microbial analysis, pesticide residue, and aflatoxins studies. From preliminary studies, extractive values of GC II is slightly higher than GC I. The studied parameters were within standard limits, the quality of the products was established and both the formulations GC I and II are safe for therapeutic use. The results obtained may be considered as reference standards for developing standard formulation.

Keywords: Goshuradi Churna, Ayurveda, Polyherbal Formulation, Standardization, Evaluation.

OR/ST3/008

Phytochemical investigation and anti-inflammatory activity of extracts of Hamelia patens Jacq. stems

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Abstract: Hamelia patens Jacq. (Rubiaceae) is generally known as scarlet bush or fire bush. It is a perennial shrub generally grown as an ornamental plant. Fire bush is used to treat athlete□s foot, inflammation, rheumatism, skin lesions, headache, nervous shock, insect bites, and asthma. The present study deals with preliminary phytochemical investigation, quantitative estimation of quercetin and anti-inflammatory activity of extracts of H. patens stems. A preliminary phytochemical investigation was performed by general chemical test, quantitative estimation of quercetin was carried out by HPTLC and anti-inflammatory activity was studied in vivo by carrageenan-induced paw edema in rat and in vitro by human red blood cell (HRBC) membrane stabilization method. The phytochemical investigation of extracts of H. patens stems shows the presence of triterpenes, sterols, alkaloids, tannins, flavonoids, glycosides, carbohydrates and proteins. The total ethanol extract of H. patens stems contains 0.069 % w/w Quercetin. The ethanol extract of H. patens showed a significant reduction of inflammation in carrageenan-induced rat paw edema and protection of HRBC in hypotonic solution when compared with control. The ethanol extracts H. patens stems showed anti-inflammatory activity supporting use in traditional medicine to treat inflammatory conditions. The H. patens hold a definite role in the management of inflammation. Further studies involving the isolation of the phytoconstituents of the plants and the investigations into the biochemical pathways may result in the development of a potent anti-inflammatory agent with low toxicity and a better therapeutic index.

Keywords: Carrageenan-induced paw edema, Hamelia patens, HPTLC, HRBC membrane stabilization method

OR/ST3/009

In vitro study of PLANT 'Calotropis procera' for evaluation of its Antidote property against snake bite

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Abstract: In India, Naja naja (Cobra venom) and Vipera russelli (Russelle's Viper) are the most common snakes found throughout the country and a large number of deaths occur due to envenomation by the snakes. It is documented that there are 54,00,000 snake bites with 2,50,000 envenomation and around 1,25,000 fatalities annually in the world. The only one specific treatment available for snake bite is anti-snake venom. The anti-snake venom is the immunological derive product may have risk for serum sickness, anaphylactic shock and hypersensitivity reaction. The anti-snake venom potential of aqueous extract of Calotropis procera was screened using enzyme assay in Viper venom and Cobra venom. The studies were carried out by prior incubation of the venom with both extracts in different concentration. The inhibiting potency of the plant extract was compared with the standard enzyme inhibitor. Latex of Calotropis procera have significant inhibitory activity against phosphomonoesterase, phosphodiesterase, and acetylcholinesterase in both Viper and Cobra venom. While aqueous extract of Calotropis procera have no significant inhibitory activity against amino-acid oxidase in Viper venom, but have desirable results in Cobra venom. Calotropis procera gave the impression of being prominent candidate of drug targets for snake bite patient and can be utilized to develop a novel herbal formulation or compound, establishing gold standard of care for every one affected by Snake bite.

Key word: Snake venom, Snake bite, Calotropis procera, Enzyme inhibition, Viper venom, Cobra venom.

OR/ST3/0010

HPTLC COMPARISION STUDIES WITH MARKER COMPOUND AND ISOLATION OF A FLAVONOID FROM ETHANOLIC LEAF EXTRACT OF RIVEA HYPOCRATERIFORMIS(DESR.)CHOISY

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Abstract: The ethanolic leaf extract of plant Rivea hypocrateriformis (Desr.) choisy with convolvulaceae family were subjected to phytochemical investigation shows the presence of alkaloids, phenols, flavonoids, terpenoids, tannins, glycosides saponins, sterols and carbohydrates Further the HPTLC comparison studies was carried with marker compounds Quercetin, Rutin and from the studies it has been concluded that the RF value of Quercetin is 0.87 which correlates with the Retention factor of ethanolic leaf extracts of RH. Firstly, alcoholic extract is treated with petroleum ether to remove fat and impurities TLC was performed by using toluene:ethyl acetate: formic acid and same solvent system decided to use for column chromatography. A clean dried glass column was taken and add 2/3 quantity of activated silica to the column and add sufficient quantity of toluene in a column. A mixture of toluene and silica taken in a clean beaker, stir well at optimum speed, pour silica-toluene slurry into column through funnel, allow the silica to settle down and open the knob to remove excess toluene, level of solvent must be at least 1 inch above silica to avoid drying of column. Activated silica with plant extract, poured into the column set aside for half an hour, then 20 ml of toluene transferred into column and allow to drain, the separation of bands was observed collected in the test tubes.TLC was performed by using same solvent system toluene: ethyl acetate: formic acid in a concentration of 5:4:1 and a single component was characterized and detected through Mass,IR and NMR.

Key Words: HPTLC studies, Marker compound, column chromatography,

Rivea hypocrateriformis ethanolic leaf extract, TLC plates.

OR/ST3/0012

EVALUATION OF PHYTOCHEMICAL CONSTITUENT AND ANTIOXIDANT ACTIVITY OF AQUEOUS AND ALCOHOLIC EXTRACT OF BETA VULGARIS L.

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Abstract: Reactive oxygen species are involved in development of different pathological conditions like cardiovascular diseases, cancer and neurodegenerative diseases leading to cause of death. Foods and vegetables are rich in antioxidants that will increase ROS degradation and thus decrease ROS-associated disease conditions. Beta vulgaris commonly known as beet root belongs to family Amaranthaceae. It is rich source of various valuable chemical constituents. Aim of present study is to evaluate a phytochemical constituents and antioxidant activity of aqueous and alcoholic extract of beet root. In this study In-vitro antioxidant activity of aqueous and alcoholic extract was tested using radical scavenging activities of 1,1-diphenyl-2-picrylhydrazyl (DPPH), ABTS scavenging and Superoxide scavenging activity. The phytochemical evaluation showed the presence of phenolic and flavonoids in Beta vulgaris L extract. At concentration of 1 mg/ml beet aqueous extract showed 49.22 % and alcoholic extract 38.75% of DPPH radical scavenging activity. Beet Aqueous extract showed higher scavenging activity, 76.74% and Beet alcoholic extract showed moderate scavenging activity, 44.18% against ABTS free radicals. In Superoxide scavenging activity aqueous extract showed 66.62% and alcoholic extract 65.71% scavenging superoxide radical. The current study suggest that Beta vulgaris L extract have significant antioxidant potential. Thus Beta vulgaris L extract might be used as natural agents in pharmaceutical and food industries.

Keywords: Beta vulgaris L, antioxidant, Reactive oxygen species, DPPH, ABTS.

OR/ST3/0013

PHYTOCHEMICAL PROFILING OF NEUROCALYNX CALCINUS METHANOLIC EXTRACT BY UP-LC HRMS FOR WOUND HEALING ACTIVITY

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Abstract: Wounds are basically physical injuries caused to living tissues due to discontinuation disruption of cellular function, anatomical rupture and functional issues in the concerned parts and wound healing is an intricate restoration of the damaged tissue by anabolic progression due to enhanced cellular function and matrix signalling and various physiological processes. Still, satisfactory solution is still not viable for complete wound healing. Need of the hour is a wound healing product which is natural, easily available with reduction in pain and finances, as well as restorations of tissue integration, with minimum scar and quick healing. Based on ethnopharmacological studies Neurocalynx Calcinus (Rubiaceae) was chosen for comprehensive research on in-vitro and in-vivo wound healing investigation. This plant is called as “Pacha chedi’ ’native to jungles of Kerala and south India. The plant is reported to have properties like anti-oxidant, analgesic, and anti-inflammatory, it also showed significant wound healing burn healing, and immunoenhancing properties. Several of the chemicals like flavonoids were discovered in the NCME extract by HR LCMS analysis. Additionally, solutions with various NCME crude concentrations made with this extract were assessed for its anti-inflammatory, antibacterial, and the acute dermal healing processes in a rat excision wound model and safety. The results of histopathology demonstrated the best rate of wound contraction. Compound Like glucoside, Kaempferol, quercetin were identified in NCME known as wound healers. The result also showed that NCME extract was having good antimicrobial, anti-inflammatory, and antioxidant activity along with good wound healing properties.

Keywords: Herbal drugs Phytoconstituents Ethnopharmacology · Natural resources, Wound healing, US -LCMS, Incision model

OR/ST3/0014

Comparative Study of Lantana Camara with Other Herbal Plants Used In Thrombosis

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Abstract: The major causes of morbidity and mortality in a wide range of vessels diseases is because of thrombosis. Lantana camara is an important ethno medicinal plant with several medicinal properties is used widely in traditional medicinal system to cure a variety of diseases including blood-related causes . The plants used for comparative studies are reported to cause variations in clotting time; this is mainly by disruption of the coagulation cascade and to have antithrombin property. An ancient medicine based on its own principles and development of drugs has a good potential for pharmacotherapy. Herewith are discussed about comparative studies of Lantana camara with few herbal medicinal plants used in thrombosis. The main objective of study is comparison of antithrombin activity of crude extract of herbal plants. In this, we focused on our current understanding of the regulatory mechanisms of traditional medicinal herbs in thrombosis. Herbal plants Lantana camara, Allium sativum, Rosmarinus officinalis, Boswellia serrata, Sesamum indicum, Matricaria chamomilla and Carthamus tinctorius had taken for the study the effect as antithrombotics. Extraction was done using standard extraction process by using Soxhlet apparatus and different solvents based on their polarity. The Antithrombin activity was evaluated by chromogenic assay. The study was performed on rabbits with prior approval from AIEC. All herbal plants taken for study have shown the antithrombin activity. In the comparative study, Lantana camara has shown less or more antithrombin activity than other herbal plants.

Keywords: - Herbal plant, Antithrombin, Lantana camara, Chromogenic assay etc

OR/ST3/0015

Ayurvedic edible crab Rasayana attenuates Rotenone-induced oxidative stress, neuroinflammation, and dopamine depletion in a rat model of Parkinson's disease

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Abstract: Parkinson's disease (PD) is the second most common neurodegenerative disease after Alzheimer's. The main hallmark of the PD is loss of dopaminergic neurons in the substantia nigra pars compacta and subsequent loss of dopamine in the striatum due to oxidative stress, neuroinflammation, mitochondrial dysfunction, excitotoxicity, and apoptosis. The present study examined the neuroprotective effect of Karkataka Taila (KT), a virgin coconut oil (VCO) based Rasayana formulation that is enriched with the flesh of freshwater edible crab, used to treat PD or Kampavata by local Ayurveda practitioners of Kerala state. Male Wistar rats are injected with rotenone (2.5 mg/kg body weight i.p) once daily for 10 days and subjected to oral administration of KT (400 mg/kg and 200 mg/kg body weight) for 21 days. Behavioral assay was performed during the treatment period. On the 21st day, animals are sacrificed for biochemical evaluations. Treatment of Rasayana significantly reversed the toxic effects of rotenone by increasing the levels of dopamine, reducing oxidative stress, and neuroinflammation along with enhanced behavior performance. Because of the multifactorial etiology of PD, drugs with multiple targets, such as edible crab Rasayana, may have therapeutic potential for these pathologies. Overall, these findings indicate that edible crab Rasayana can mitigate the toxic effect of neurotoxin rotenone, and as such, it may be considered a potent molecule for alternative and complementary neuroprotective therapy.

Keywords: Behavior, Dopamine, Neuroinflammation, Oxidative stress, Parkinson's Disease, Rasayana, Rotenone.

OR/ST3/0018

Alternative to conventional excipient from vegetable source to improve/regulate drug delivery and tachyphylaxis

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Abstract: Tablet is the preferred solid drug dosage form. Cellulose fiber(MCC) is the major excipient. For chronic diseases, frequent dosage is required resulting in cumulative excipient load and tachyphylaxis due to drug. We intent to invent excipients from vegetable sources to mitigate above challenges and reduce dosage as chronic sufferers (Diabetes mellitus) requires lifelong treatment.To develop excipient from Brassica oleracea and Vigna radiata sprouting to regulate drug delivery, avoid excipient led toxicity and tachyphylaxis.Alkali and acid based polymerization method was followed and cellulose fibers were studied for safety, physical, chemical and molecular parameters.Using the cellulose fibers two drugs were formulated using API, Metformin and Miglitol. Activity was assayed using cell lines-Neuroblastoma, Kidney HK-2, L6 Myoblasts, 3T3-L1 Preadipocytes, INS-1 and hepg2 hepatocytes and compared with conventional MCC based drugs.Characterization of both excipients was done in comparison with conventional cellulose based excipients, invented excipients had long fibers, higher bulk density, flow, even particle size compared to conventional cellulose. Dissolution and disintegration of Metformin from Brassica oleracea fiber was slow and Miglitol showed quick release from Vigna radiata compared to conventional excipient. Therapeutic activity of both drugs from fibers of Brassica oleracea and Vigna radiate was higher compared to conventional excipient based drug by cell culture assay. Both excipients did not show mutagenic effect (AMES test). Brassica oleracea fiber may help slow release of metformin; reduce drug dosage, tachyphylaxis, release of Miglitol from Vigna radiata was rapid, may compliment metformin therapy.

Keywords: Herbal excipients, Cellulose fibers, Microcrystalline cellulose, tachyphylaxis, vegetable source excipient, Brassica oleracea, Vigna radiate, Metformin, Miglitol

OR/ST3/0019

Designing, Formulation Development and In Vitro Anticancer Evaluation of siRNA - PLGA Nanoparticles for Targeting MEN1 Gene in Breast Cancer Cells

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Abstract: Multiple Endocrine Neoplasia 1 (MEN1) gene is located on chromosome 11q13.1 which encodes a protein called Menin and is involved in increased risk of breast cancer. Menin regulates antiproliferative genes in mammary progenitor cells, which may contribute to oncogenesis. A sequence-specific knockdown of MEN1 gene with the use of small interfering RNA (siRNA) is likely to exhibit therapeutic potential in breast cancer. Systemic siRNA therapy requires the evolution of therapeutically safe, robust, as well as efficient drug delivery systems to overcome its delivery obstacles. PLGA has been approved by FDA as an efficient delivery carrier due to its biocompatibility as well as biodegradability properties. The objective of the present study was to design an siRNA sequence for MEN1, encapsulate the siRNA into a nano formulation to improve effectiveness and study its effect on breast cancer cells. PLGA loaded siRNA nanoparticles were prepared by double emulsion solvent diffusion (DESE) method. Characterization of prepared PLGA-nano formulation was done followed by cytotoxicity studies and expression studies. Particle size of PLGA- nanoparticles was found in the range of 150 - 250 nm. In vitro studies in MCF-7 and MDAMB231 cell lines have revealed effective knockdown of the MEN1 gene by PLGA loaded nanoparticles which impedes the proliferation of cells and inflates apoptosis in breast cancer cells, substantiating the anti-cancer activity of prepared nanoparticles. Cell viability was observed using dual staining studies. Present study also revealed that the extent of silencing of MEN1 gene by PLGA nanoformulation has improved significantly compared to naked siRNA.

Keywords: MEN1 gene, PLGA, breast cancer, siRNA, cytotoxicity.

OR/ST3/0020

Biotransformation of D-Limonene to β-Myrcene by a newly isolated strain of Bacillus subtilis; Identification of Metabolites by GC-MS

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Abstract: Biotransformation products like perillyl alcohol, carvone and α-terpineol have been proven to have pronounced pharmacological actions like chemoprevention of cancer. The versatile loci in the limonene chemical structure help to obtain the transformation products via reduction, hydroxylation, epoxidation, epimerization, hydrogenation, and isomerization reactions. The aim of the present study was to convert D-limonene to β-myrcene, cis-limonene oxide, and trans-limonene oxide by using various microorganisms and to analyses these metabolites. Bacillus subtilis was isolated by an enrichment culture technique using extracted lemon oil as the sole source of carbon. A loop of inoculate from a slant culture was transferred to a 250ml flask containing 50ml of the GY liquid medium and cultured on a shaker at 30-35°c for 1–7 days. To the resulting culture broth, 1% (v/v) Limonene was added as a substrate using sterile technique. Flasks were incubated in a dark room at 25°C on an orbital shaker. Major conversion products were identified as β-myrcene and cis or trans limonene oxides were identified as minor products by GC-MS. A new strain of Bacillus subtilis was isolated from soil which efficiently transformed D-limonene to β-myrcene and cis limonene oxide. This is the first report of the biotransformation of D-limonene into β-myrcene and cis/trans limonene oxides.

Keywords: Biotransformation, Bacillus subtilis, D-Limonene, β-Myrcene, trans and cis limonene oxide

OR/ST3/0027

PRODUCTION OF L- TYROSINASE FROM VARIANTS OF STREPTOMYCES CELLULOSAE (PD26 & PD18), PROMISING SOURCES FOR POTENTIAL BIOACTIVE COMPOUNDS

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Abstract: Tyrosinase is a copper containing metalloprotease enzyme of industrial interest. Objectives: The present study was mainly focused on screening and taxonomical characterization of selected promising tyrosinase producing isolates isolated from kapuluppada plastic waste dumping yard, near kommadi, Visakhapatnam, A.P., India. Method: Initially six various actinomycetes isolates were used in present study. Primary screening and secondary screening of selected isolates were performed. Identification of promising isolates were carried out by studying the morphological, cultural, physiological, biochemical and molecular characterization. The Phylogenetic studies of the isolates were carried out by employing 16S rRNA gene sequencing. Phylogenetic tree was constructed using the MEGA (Molecular Evolutionary Genetic Analysis) software version 6. Results: The potential actinomycete isolates were identified as variants of Streptomyces cellulosae, PD18 and PD26. The maximum tyrosinase yield was found to be 21.20 IU/mL and 24.19IU/mL by isolates PD18 and PD26 respectively. Conclusion: Based on the experiment results it was concluded that SS medium with 1mg/ml was most suitable medium for tyrosinase production from our promising isolates PD18 & PD26. The maximum yield was noticed after 168hrs of incubation.

Keywords: Tyrosinase, L- tyrosine, SS medium, copper sulphate, Streptomyces cellulosae.

OR/ST3/0035

ANTI BACTERIAL , ANTI FUNGAL & ANTI TUBERCULAR ACTIVITY OF ESSENTIAL OIL EXTRACTED FROM SOME AROMATIC PLANTS, FLOWERS AND SEEDS.

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Abstract: Essential oils are the plant secondary metabolites, which are a complex mixture of flavoring volatile compounds. The biosynthesis of these volatile compounds by the plant is intended for chemical communication. They largely meant for activities like antimicrobial, cytoprotection, antioxidant and insect attraction to assist pollination. Essential oils largely contain unique mixture of mono and di terpenes. Isolation and evaluation of anti microbial and anti tubercular activity of essen In the present work, we isolated essential oils from different plant parts including leaves, flowers and fruits which are using in our daily life. The isolation of essential oils (As these are ethereal compounds) were carried out by solvent extraction method and evaluated for their anti bacterial, anti fungal and anti tubercular activity. Among the samples tested, the flower extracts of Mari gold (Orange and yellow), Tagetus patula, Chrysanthemum (White, Yellow, Maroon and Purple), Roses (Red and orange), the flower petals and stalks of Night jasmine (Nyctanthes arbor-tristis) and Jasmine (J. officinalis and J. Multifluram) shown potent anti tubercular and good anti-bacterial activity. All these flower extracts are not having anti fungal activity except Jasminum auriculata. The extracts of umbelliferous fruits fennel, Cumin and Caraway shown significant anti fungal activity and having anti bacterial activity. Where as aromatic plants like Mint and Sweet Marjoram shown anti bacterial and anti fungal activity comparable to standard drugs, Rifampicin (anti tubercular activity), Streptomycin (anti bacterial activity) and Ketoconazole (anti fungal activity). The samples (essential oils) which are not having anti bacterial and anti fungal activity are intrestigly having potent anti tubercular activity. All the samples shown their anti tubercular activity at MIC of 3.25 micro grams per ml.

Key Words: Chemical communication, Ethereals, Essential oils, Anti tubercular activity.

OR/ST3/0037

Antitumor activity of n-hexane extract of Avicennia officinalis. Linn leaves against Dalton Lymphoma Ascites-induced ascetic tumor (DLA) in mice

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Abstract: Based on the ethnomedical use of Avicennia officinalis. Linn leaves in the treatment of boils and tumors, the present study was to evaluate the cytotoxicity against human cancer cell lines by MTT, SRB, trypan blue method, and antitumor potential by DLA (Dalton Lymphoma Ascites) induced ascetic tumor in swiss albino mice. Mice were grouped into five with test treatments 1(TT1) and 2(TT2) at 250 and 500 mg/kg body weight. The tumor was developed by injecting DLA cells into the peritoneal cavity of the mice. An average increase in body weight, Mean Survival Time, Increased Life Span, haematological, biochemical parameters, and antioxidant levels were determined. The extract showed a significant cytotoxic effect against HeLa cell lines. Compared to normal group, the mean body weight and WBC count were increased and the hemoglobin content and RBC counts were reduced in the positive control group. Test groups reversed these changes significantly at both dose levels. SGOT, SGPT, ALP, and Bilirubin levels were increased in the positive control group, TT2 group produced a significant reduction. Significant increase in mean survival time and percentage increase in life span in the standard and TT2 group compared to the positive control group. Decreased levels like SOD, Catalase, and GSH and an increase in MDA levels were observed in the positive control group and these changes were reversed in standard and TT2 group significantly. Hence, based on haematology, biochemical and antioxidant parameters, the TT2 group was confirmed with antitumor potential in DLA-induced mice.

Keywords: Avicennia officinalis, cytotoxicity, antitumor.

OR/ST3/0040

Isolation, Characterization and Screening of β- Galactosidase producing Microorganisms

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Abstract: Lactose is the major nutritive carbohydrate present in milk. Milk is a complete liquid food source for mammalian neonates. Lactose is hydrolyzed in the small intestine by the brush border enzyme beta Galactosidase (a.k.a. lactase) into glucose and Galactose. Majority of Indian adults have reduced or nil lactase activity due to genetic factors which results in lactose intolerance, a common medical condition which is characterized by bloating, abdominal pain and flatulence. The severity of symptoms varies widely including systemic complaints such as cardiac arrhythmia, lethargy, sore throat, mouth ulcers, irritable bowel syndrome (IBS) and gastroesophageal reflux disease (GERD). To alleviate lactose intolerance, a study is being conducted in which microorganisms producing Beta- Galactosidase enzyme were isolated from soil (collected from milk collection point, milk dairy and mangroves-Udupi district, Karnataka), sediment and water samples (Mattu beach- Karnataka). Biochemical Characterization of these isolates was done. Further, these isolates were screened for Beta-Galactosidase production by performing blue-white screening using lactose as an inducer. ONPG assay will be performed in order to assess the enzyme productivity of these isolates. Microbial Beta- Galactosidase has various applications in food as well as pharmaceutical industries

Key words: Lactose-Intolerance, Biochemical characterization, Beta-Galactosidase, Blue-white screening, ONPG assay

OR/ST3/0041

ISOLATION AND CHARACTERISATION OF RHIZOMES SOLUBLE POLYSACCHARIDES OF CYPERUS ROTUNDUS

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ABSTRACT: In the present investigation, non starch polysaccharides from rhizomes of the plant Cyperus rotundus [CR-SPS] were isolated, partially characterised initially by the pharmacognostical parameters like organoleptic properties, Ash values, extractive values and moisture content determination. The isolated SPS were also characterised for their swelling Index and water retention capacity. Total ash value, acid insoluble ash, water soluble ash and sulphated ash was found to be 7.14%, 2.81%, 3.43% and 5.92% respectively. The increase in the water- soluble extractive value when compared to alcohol-soluble extractive value proved the constituents of the drug are more extracted and soluble in water as compared to alcohol. Lower percentage of moisture content [7.094%] proved the higher stability of the crude drug. Preliminary phytochemical screening showed the presence of carbohydrates, tannins and flavonoids. Isolated hydrophilic non–starch polysaccharides were neutral with high swelling power [80±0.02%] and high water binding capacity [219.0 %]. DPPH radical scavenging assay of CR-SPS was carried out to evaluate the in-vitro anti-oxidant activity, which were found to be compliance with the standard ascorbic acid and CR-SPS showed concentration dependent increment in radical scavenging activity.

Keywords: Cyperus rotundus- Soluble Polysaccharides [CR-SPS], Antioxidant, Swelling, Extract

OR/ST3/0042

Formulation and Evaluation of Multipurpose Herbal Cream using Curcuma longa L and Camellia sinensis L extracts

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Abstract: Herbal remedies are in sync with nature and have gained popularity as skin care ingredient due to safety and absence of adverse effect. The current study's objectives were to extract, formulate, standardise, and evaluate a multipurpose herbal cream employing extracts from Curcuma longa L and Camellia sinensis L. The moisture content, total ash, water soluble extractive, and alcohol soluble extractive values of the dried leaves of Camellia sinensis L. and the rhizomes of Curcuma longa L. were determined and their morphological parameters were recorded. The soxhleted methanolic extract of C longa and refluxed aqueous extract of C sinensis were formulated as cream with two different bases: w/o and o/w by considering solubilization of extract, selection of cream base and perfume. The cream with an oil/water base was more stable and contained 1% phenoxyethanol as a preservative, sandal oil was used as perfume. TLC fingerprinting was employed for identification of the extracts in the formulation. In vitro release studies of polyphenols and curcuminoids revealed that the release of these phyto-actives from the formulation was time-dependent. The formulation's stability was tested for 25 days at different temperatures viz: 40°C +/-2°C, 25°C +/-2°C, and 4°C +/- 1°C. The cream was stable with no evidence of phase separation or change in colour. Testing for skin irritancy and microbiological limits for the cream demonstrated no skin irritation and complied with IP microbial limits. We conclude that, the herbal cream formulation exhibits acceptable physico-chemical properties and is safe for usage.

Key words: Curcuma longa L and Camellia sinensis L, herbal cream, Standardization, drug release study

OR/ST3/0043

Formulation and evaluation of Hand Sanitizers using Ayurvedic combination – Panchavalkala

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ABSTRACT: Hand hygiene is one of the most important measures to prevent the spread of infectious diseases. The demand for hand sanitizer is steadily increasing. Repeated use of alcohol-based hand sanitizers can cause harm. Therefore, there is a need for safe, natural antimicrobial ingredients that can be used in hand sanitizers. In this present study an attempt was made to formulate and evaluate Hand Sanitizers using a unique Ayurvedic combination - Panchavalkala known to have antimicrobial, wound healing properties. Panchavalkala is a combination of Five bark drugs which includes Ficus benghalensis L., Ficus racemosa L., Ficus religiosa L., Ficus lacor Buch. Ham., Thespesia populnea. Plants were chosen and an aqueous extract was prepared. Phytochemical screening and standardisation of extract using HPTLC and Total Phenol content was determined. Panchavalkala extract were evaluated for antimicrobial activity against two gram positive and two gram-negative organisms. Hand sanitizer liquid and gel were formulated and evaluated for antimicrobial activity and other parameters. Panchavalkala extract's HPTLC Fingerprint was established. It was found to contain flavonoids, steroids, polyphenols, tannins and saponins. It was found to have good antimicrobial activity against microorganisms in comparison to streptomycin. The two formulations were found to have good antimicrobial activity and have acceptable physical parameters. Panchavalkala extracts can be successfully formulated as Hand Sanitizer Liquid and Gel having acceptable physical parameters, good antimicrobial activity. This formulation can be used to overcome the shortcoming of synthetic hand sanitizers.

Key words: Hand sanitizer, Panchavalkala, HPTLC, Total phenol content, antimicrobial activity

OR/ST3/0044

Pharmacognostical evaluation and determination of Phosphatidylcholine and Phosphatidylserine in seeds of *Abelmoschus esculentus*

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Abstract: The main objective of the current study was to determine and correlate the concentration of Phosphatidylcholine (PC) and Phosphatidylethanolamine (PE) in seeds of Abelmoschus esculentus and to perform the pharmacognostical evaluation of seeds of *Abelmoschus esculentus (Ae)*. *Abelmoschus esculentus* is commonly called as Okra or lady's finger. Pharmacognostical evaluation of seeds such as moisture content (loss on drying method), and Ash values (total ash value, water soluble ash value and acid insoluble ash value) were determined. The seed oil was extracted by Bligh and Dyer method, by using a mixture of chloroform and methanol in 2:1 (vol/vol) ratio. The seed oil was estimated for its acid value, saponification value, ester value, refractive index, viscosity and density. Later, the extracted lipids were fractionated into neutral lipids, glycolipids and phospholipids by silica gel column chromatography. The sample was loaded on to silica gel and was successively eluted with chloroform to obtain neutral lipid, acetone to obtain glycolipid and methanol to obtain the phospholipid fractions. Fatty acid composition of the neutral lipid (i.e., oil) was determined by gas chromatography after converting to fatty acid methyl esters by treating with methanol-sulphuric acid reagent. The polar lipids were found to contain only phospholipids. PC and PE were determined using high performance liquid chromatographic method coupled with evaporative light-scattering detector. The components of phospholipids were eluted within 20 minutes using a binary gradient system mobile phase. A binary gradient mobile phase system composed of eluent A [water] and eluent

B [acetonitrile] was used for elution. The identification of phospholipids was carried out by comparing the retention times of the respective commercial standards. Percentage of PC and PE in polar lipids were determined and were found to be 24.6% and 75.4% respectively. These findings can serve as a reference for the future research studies and as per the available literature we are first to determine PC and PE in *Abelmoschus esculentus*. PC and PE can be used to treat targeted cells for a several biological activities.

Keywords: Phosphatidylcholine, phosphatidylethanolamine, *Abelmoschus esculentus*

OR/ST3/0046

In vitro Cytotoxicity study of Brown algae

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Abstract: Cancer is a leading cause of death worldwide. There are multiple signalling pathways involving a variety of target molecules to cause Cancer. Cancer causes morbidity and mortality in millions of people and due to its prevalence, the discovery of novel anticancer drugs is required urgently. Nature is considered an important source of the discovery of anticancer drugs. Many of the cytotoxic drugs in practice, are derived from natural sources. Marine organisms have been recognized as a source of novel metabolites with applications in human therapy. With this hypothesis, the current study is on the screening of preliminary phytochemicals and the in vitro cytotoxic study of two brown marine algae Padina gymnospora and Sargassum myriocystum. The phytoconstituents flavonoids, alkaloids, tannins and phenols, and saponins were found to be present in varied concentration in the above mentioned algae. The cytotoxic study of hydroalcoholic extracts of both the brown algae were determined by MTT(3-(4,5-dimethylthiazol-2-yl)-2, 5-diphenyl-2H-tetrazoium bromide) assay, using SHSY5Y cell line at 125µg/ml, 250µg/ml and 500µgm concentrations, IC50 of Padina gymnospora and Sargassum myriocystum found to be 62.0077µg/ml and 86.9567µg/ml respectively.

Keywords: in vitro cytotoxic study, Padina gymnospora, Sargassum myriocystum, phytoconstituents, MTT assa

OR/ST3/0048

In vitro studies on freshly isolated hepatocytes using the most effective fraction of *Abutilon indicum* demonstrated liver protection

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Abstract: Humans can be exposed with metabolic compounds by environmental exposure, eating tainted food, or working in an area. In addition, people frequently use synthetic medications to treat illnesses that are foreign to their bodies organs. All of these substances cause a wide range of toxic symptoms in the liver, and standard medications used to treat liver problems are frequently insufficient. The present study investigates hepatoprotective effects of whole plant extract of *Abutilon indicum* Linn on freshly isolated rat Hepatocytes . D-Galactosamine model was used to asess is hepatoprotective action since its effects on the liver closely match those of viral hepatitis in terms of aetiology and toxicity signs. Various extracts was prepared by soxhelation using different solvent system from petether to water. Qualitative phytochemical analysis of extracts showed the presence of the compounds including Amino acid, Alkaloids, Carbohydrates, Flavonoids, Glycoside, Protein, Phytosterol, Saponins, Steroids, and Tannins.. In *Invitro* all the extracts showed considerable protectivity against D- Galactosamine induced toxicity in primary hepatic cells. Ethyl acetate extract at concentration of 200 to 800 µg/ml showed good restoration and it was comparable with standard silymarin, using D-Galactosamine as toxicant. All the biochemical parameters were estimated and compared with that of the control. In this study standard silymarin has been used along with the tests extracts (100, 200, 400, 800 µg/ml). This silymarin showed very good restoration of enzyme levels to normal.The results were encouraging to state that the hepatoprotective activity exhibited by the ethyl acetate extract of *Abutilon indicum* Linn was found to be equivalent with standard silymarin.

Keywords: *Hepatoprotective, D-Galactosamine, SGPT, SGOT, ALAT, Hepatocytes, Abutilon Indicum,*

OR/ST3/0049

Conventional Prospective Herbs for Dementia

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Oxidative trauma, which arbitrates neurotoxicity via atypical accretion of Tau and Amyloid β proteins, may improve formation and accretion of Amyloid β linked via phosphorylation and polymerization of tauproteins. Pharmacologically effective plants have been developed into herbal formulations in a pharmaceutically adequate dosage as a memory enhancer and in the treatment of dementia. Various herbal formulations are currently undergoing clinical trial, such as, **Danggui-Shaoyao-San (DSS)**, which is also known as **Dangguijakyak-san (DJS)** or **Toki-shakuyaku-san (TJ-23)** is a traditional herbal formulation that constitutes of Angelica sinensis (Oliv.) Diels., Ligusticum chuanxiong Hort., Paeonia lactiflora Pall., Poria cocos (Schw.) Wolf., Alisma orientalis (Sam.) Juzep. and Atractylodes macrocephala Koidz.; **Kami-kihi-to** is composed of Angelica acutiloba Kitagawa, Astragalus membranaceus Bge., Atractylodes lancea DC., Bupleurum falcatum L., Gardenia jasminoides Ellis., Panax ginseng C.A. Mey., Glycyrrhiza uralensis Fisch., Poria cocos Wolf., Euphoria longana Lam., Polygala tenuifolia Wild., Saussurea lappa Clarke., Zingiber officinale Rosc., Zizyphus jujuba Mill. var. inermis Rehd., Zizyphus jujuba Mill. var. spinosa.; **Yokukansan** is another herbal formulation that comprises of Uncaria rhynchophylla Schreb., Angelica acutiloba L., Cnidium officinale Makino., Glycyrrhiza uralensis, Atractylodes lancea DC., Bupleurum falcatum L., Poria cocos Wolf., **Chongmyeong-tang** is composed of Polygala tenuifolia Wild., Poria cocos Wolf., Acorus gramineus Linn. Herbal treatment reduces the symptoms of dementia and thus controls the disease progression. Such a non-toxic therapy would be a potential choice as an alternation in the disease management and some are under clinical trials.

Keywords: *Oxidative, Neurotoxicity, Phosphorylation, Amyloid β,Tauproteins.*

OR/ST4/001

Effect of Vitamin C and Vitamin E on Di-(2-ethylhexyl) Phthalate Induced Ovarian Gene Alterations in Pubertal Female Wistar Rats

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Abstract: Di(-2-ethylhexyl) phthalate (DEHP), a plasticizer is a widely known reproductive toxin. Several research states that the female reproductive system exposed to DEHP causes oxidative stress (OS), which in turn affects female fertility. Vitamin C and E antioxidants have been shown to protect the male reproductive toxicity caused by DEHP in animal models. Our study aimed to demonstrate the effect of Vitamin C and Vitamin E on DEHP-induced ovarian gene alterations in female Wistar rats. 4 weeks old pre-pubertal female Wistar rats weighing 60±10g were segregated into five groups. Oral gavage of corn oil (vehicle), 100 mg/kg DEHP, 100 mg/kg DEHP with Vitamin C and E and the combinations, were treated for 30 days until PND 65. Ovarian morphological changes and steroidogenic gene expression alteration were analyzed. Vitamin C in combination with DEHP treated group showed more growing follicles and less atretic follicles in comparison with DEHP group. Decreased FSHR, LHR, LDLR, STAR, 17β-HSD and 3β- HSD gene expressions in DEHP treated groups compared with control was observed. Vitamin C showed a protective effect against the decreased gene expression when co-administered while Vitamin E or Vitamin C Vitamin E co-administered with DEHP groups didn't show any significant increase in expression compared with DEHP exposed group. Vitamin C showed a protective effect against DEHP-induced ovarian morphological changes and gene expression alterations which suggests us antioxidant therapy in DEHP-induced toxicity.

Keywords: Di (2-ethylhexyl) phthalate (DEHP), female reproductive toxicity (uterine/ovarian), ovarian gene expression

OR/ST4/002

Comparative Pharmacokinetics Evaluation of Ubiquinol Acetate, Ubiquinone and Ubiquinol in male Sprague Dawley Rats

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Abstract: Coenzyme Q10 (CoQ10) is a natural, lipid soluble and vitamin-like endogenous antioxidant mainly present in two forms ubiquinol and ubiquinone. Most CoQ10 supplements contain ubiquinone because ubiquinol is unstable and easily converts back into ubiquinone when exposed to air. Ubiquinol acetate (EnQ10) is a stable novel antioxidant developed in recent days. The present study was designed to evaluate comparative single dose oral pharmacokinetic studies of EnQ10, ubiquinone and ubiquinol in male SD Rats at 300 mg/kg body weight equivalent dose of ubiquinone. Six animals per group for each compound were dose with oral suspension formulations of EnQ10, ubiquinone and ubiquinol prepared in 0.1% (v/v) Tween 80 and 15 % (w/v) Hydroxypropyl-β-cyclodextrin. Plasma samples were collected at time points of 1, 2, 4, 6, 8, 10, 24, 30 and 48 hours and analyzed using LC-MS/MS for the analyte's ubiquinone and ubiquinol. In EnQ10 dosed animals, the mean C_{max} (347.83 ng/mL) of ubiquinol was found to be 2.52 times higher v/s ubiquinone dosed animals (137.90 ng/mL). Also, in EnQ10 dosed animals, AUC_{last} (4808.94 hr*ng/mL) for ubiquinol was found to be 3.96 times higher v/s ubiquinone dosed animals (1214.42 hr*ng/mL). One-way ANOVA was performed for the C_{max} and AUC_{last} of ubiquinol. There was significant increase ($P<0.05$) in the C_{max} and AUC_{last} of ubiquinol in animals dosed with EnQ10 compared to the animals dosed with ubiquinone.

Keywords: Coenzyme Q10, CoQ10, EnQ10, Ubiquinol, Ubiquinone, Ubiquinol acetate

OR/ST4/005

Potential of Glycyrrhizin-rich Glycyrrhiza glabra Linn. Extract in Affective Disorders Associated with Chronic-Stress

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Abstract: Aim of this study was to evaluate the beneficial effect of Glycyrrhizin-rich Glycyrrhiza glabra Linn. extract (GGE) in affective disorders associated with chronic-stress conditions. Experimental works were carried out after one-week treatments with GGE (50, 100 and 200 mg/kg/day, p.o.) as per IAEC approved protocol (IAEC/2020-II-R06, dated 26.11.2020, DPSRU, New Delhi) to determine its salutary effects on affective behaviours in chronic restraint-stressed Wistar Albino male rat. Spontaneous locomotor activity revealed that GGE (100 and 200 mg/kg, p.o.) and donepezil (10 mg/kg/day, p.o. as standard drug) significantly counterbalance (p□0.05) the decreased locomotor activity due to stress. During the exploratory activities in the hole-board test, GGE extract except for 50 mg/kg demonstrated significant increase (p□0.05) in the number of head dips in comparison to the stress control rats. These results were somewhat similar to the results of the standard drug donepezil. The beneficial effects of GGE are also ornamental to its dominant modulatory activities in plasma-cortisol levels and inflammation. Chronic-stress produced significant ($p<0.05$) elevated blood/brain levels of cytokine and plasma cortisone in comparison to the normal control group. Irrespective of the kind of cytokines tested and plasma cortisol, GGE demonstrated a significant ($p<0.05$) declining effect in dose-dependent manner. Histopathological examinations also supported its neuroprotective effect of GGE as shown in brain section as well as normalised hypertrophy in cellular components of adrenal glands. Therefore, GGE could be a potential drug candidate for the treatment of affective disorders and associated comorbidities related to stress partly through its anti-inflammatory activities and cortisol pathway modulation.

Keywords: Chronic restraint-stressed, Glycyrrhizin, Glycyrrhiza glabra, Affective behaviour, Anti-inflammatory, Plasma cortisol

OR/ST4/008

A brief review on various drugs inducing osteoporosis

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Abstract

Osteoporosis is a condition associated with low osseous density and bone structure degeneration, which can result in fragility and an elevated risk to hip or spine fractures. Osteoporosis is known to be associated with ageing, chronic low calcium intake, low estrogen levels, hypogonadism, hyperthyroidism and a family history of osteoporosis. The lesser-known fact is that some prescription drugs could perhaps enhance one's probability of developing osteoporosis. Many commonly prescribed medications have deleterious impacts on bone homeostasis, resulting in lower bone mineral density (BMD) and an increase in fractures. Glucocorticoids (GCs), selective serotonin receptor inhibitors (SSRIs), proton pump inhibitors (PPIs), thiazolidinediones (TZDs), anticonvulsants, medroxyprogesterone acetate (MPA), hormone deprivation therapy, calcineurin inhibitors, chemotherapies, and anticoagulants are few examples of such medications. Drug induced osteoporosis is entirely avoidable condition. Identifying possible drug contributing factors, surveillance therapy, and incorporating preventive measures could perhaps substantially improve patients' quality of life. Enhancing our understanding of these negative effects will allow us to better risk stratify our patients, use alternative medications when possible, and employ preventative measures when required.

Keywords: Osteoporosis, Prescription drugs, Fracture

OR/ST4/009

Biological Evaluation of (S)-Equol for Hypolipidemic Activity and Tolerability of 28 Days Repeated Dosing in Sprague Dawley Rats

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Abstract (S)-Equol was evaluated for Hypolipidemic activity and tolerability when administered daily once by oral gavage for 28 days in Sprague Dawley rats. G2, G3, and G4 group animals were treated with the (S)-Equol at dose levels of 20, 60, and 120 mg/kg body weight respectively. G1 group animals were administered with the vehicle alone. G5 and G6 group animals were administered with Ezetimibe (5 mg/kg body weight) and Rosuvastatin (10 mg/kg body weight). During the period of administration, the animals were observed for signs of toxicity. The test specimens at the end of the in-life phase study were collected and evaluated for adverse effects. At the end of treatment, all animals were euthanized and necropsied. Repeated dose administration of (S)-Equol by oral route for 28 days at 20, 60, and 120 mg/kg in both sexes showed no adverse clinical signs of toxicity, mortality/morbidity. No treatment-related adverse effects were observed on body weight, body weight gain, feed consumption, hematology, clinical chemistry, and organ weights. Gross necropsy and histopathological examination revealed no treatment-related changes compared to normal group. Hence, the NOAEL of (S)-Equol was determined as 120 mg/kg body weight under the experimental conditions. Further, repeated dose administration also showed a significant decrease in total cholesterol levels in high dose males and females (G4) compared to G1, G5, and G6 group animals which revealed the hypolipidemic activity of (S)-Equol in normal rats.

Key Words: (S)-Equol, Hypolipidemic, Tolerability, Histopathology, Rosuvastatin, Ezetimibe.

OR/ST4/0011

Assessment of Pattern of poisoning cases in a tertiary care hospital

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Abstract The constant availability of new chemicals such as agricultural chemicals, household chemicals, industrial agents, and medications, makes it difficult for doctors to identify poisoning agents and treat them. This prospective observational study in a tertiary care teaching hospital included a total of 227 victims who visited the Emergency Medicine Department (EMD). A majority of the poisoning/ envenomation victims were males (151: 66.51%) followed by females (76; 33.48%). A majority of poisoning victims were from the age group of 21–30 (n=82) years followed by the age group of 31–40 years (n=41) of total poisoning cases. Intentional poisoning contributed to 59% (n=133) of total poisoning when compared to accidental poisoning, which accounted for 41% (n=94). The motive for intentional poisoning was analyzed by talking with and gathering history from the victim's relatives/caretakers was found to be family/ marital discords, which accounted for 33.08 % (n=44) This was followed by the financial problems like debt, failure of crops (n=30; 22.56%), there is a strong association with age group and circumstances of poisoning P-value <0.05. Pesticides were the most common agents implicated in the poisoning contributing to. 32.60% (n=74) of all poisoning agents, followed by Drugs 19.82% (n=45). A total of 18.94% (n=43) cases were documented for admission with envenomation from snakes and arthropods. The implication of the household products accounted for 11.89% (n=27) of total poisoning. The Treatment Outcomes resulted in Recovery of 77.09% (n=175) Death of 4.41% (n=10), and Discharge Against Medical Advice of 18.50% (n=42). During the study the poison information was provided to healthcare practitioners with the aim of better patient care and Management of Poisoning. A total of 227 queries were answered by the physicians, postgraduate students, and nursing staff. Moreover, Qualitative analytical services were provided to assist the healthcare practitioners in the treatment of victims admitted with acute or chronic poisoning due to unidentified poison. We analyzed the pattern and results of poisoning in this study, as well as offered poison information and control services to healthcare professionals and the general public.

Keywords: Poisoning, Poison Information Centre, Snake Bites, Herbicide.

OR/ST4/0012

Evaluation of neuroprotective property of Tecoma Stans flowers extract

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Abstract: The present research work was designed to evaluate the neuroprotective property of Tecoma Stans flowers extract in experimental animals. In the present study the neuroprotective activity was assessed using motor coordination test using rotarod apparatus, memory enhancing activity in mice using elevated plus maze and learning & memory study by Morris water maze. Muscle rigidity of animals was evaluated by using the rotarod apparatus, the test extract at different doses showed significant increase in the muscle grip activity and also Brain lipid peroxidation (LPO) and nitrites levels were decreased and glutathione (GSH) & total protein levels were increased. In elevated plus maze the various doses of test extract significantly reversed (decreased the travel latency) scopolamine induced memory impairment in mice as compared to scopolamine treated groups. The test produced a significant decrease in brain Acetylcholinesterase as compared to scopolamine treated animals. In Morris water maze (MWM) test the test extract at different doses and standard drug Donepezil was found to decrease the escape latency time significantly as compared to that of scopolamine treated animals. The results obtained from the present research work suggest that the test drug was having potent neuroprotective efficacy in the experimental animal models.

Keywords: Neuroprotective, GSH, Scopolamine, Acetylcholinesterase.

OR/ST4/0014

Developmental research of High Resonance-Liquid Chromatography and Mass Spectroscopy of Bacopa Monnier on neuroprotective investigation on Sprague Dawley rats using Propionic acid to induce autism spectrum disorder

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Abstract Autism spectrum disorder (ASD) is characterized by complex behavioural and memory difficulties as a result of abnormal brain development, the goal of the study is to pinpoint the gap in knowledge on the causes of autism. Bacopa Monnier is acknowledged by the Ayurvedic medical system for its potential nootropic activity to enhance brain and neural processes like memory and learning. The Ayurvedic herb Brahmi, also known as Bacopa Monnier, has been proven to be a memory-enhancing treatment. In the current study, the neuroprotective activities of Hydroalcoholic extract of Bacopa Monnier against propionic acid-induced neuroprotective effect in autistic rat models were studied. Adult Sprague Dawley rats of both sexes were separated into four groups and given the vehicle/extract for 28 days as the study's test subject. Autism was produced on by a propionic acid intracerebroventricular infusion between days 22 and 28 of the study. During this infusion period, rats were exposed to essential techniques such as various in vivo behavioural and memory evaluation tests, including the actophotometer test and the Morris water maze test. Animals were euthanized on the 29th day of the investigation to obtain brain material. TNF- levels in the brain tissues that had been removed were determined, and histological analysis was also performed. A Sprague Dawley rat preclinical study in which propionic acid was produced and in vivo and invitro models were assessed was included in the preclinical investigation. Pre-treatment of rats with extract at two dose levels (250 mg/kg and 500 mg/kg) results in a dose-dependently substantial decrease in the neuroinflammation, memory impairment, and cognitive impairment caused by the propionic acid induced model. The results showed that Bacopa Monnier L had significant anti-inflammatory and neuroprotective effects against propionic-caused autism. ASD is characterized by social dysfunction, difficulties with language and communication, and a small number of activities and interests that are both particular to the person and predictable in their focus. Autism spectrum disorder frequently co-occurs with other neurological illnesses such as intellectual disability (ID), global developmental delay (GDD), and epilepsy (ASD). ASD does indeed have a complex aetiology.

Keywords: Bacopa Monnier, Neuroprotective, High resolution liquid chromatography-mass spectrometry(HRLCMS)

OR/ST4/0015

Evaluation of Wound Healing Properties of AngioHealix®, a Proprietary Medicine in Rats

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Abstract: Wound healing is an important field of pharmacological research work. In spite of ample advancement of modern medical science, no ideal wound healer drug has been invented. The primary aim of this study was to evaluate the wound healing efficacy of the AngioHealix®, a proprietary medicine on the induced wound including burn wound in animals. The study was conducted after institutional animal ethics committee clearance. All the animals were experimented and maintained following standard guidelines. The rats were inflicted under deep anesthesia with thiopentone sodium (50 mg/kg, intraperitoneally) using a special type of sterile circular blade, Acu-Punch and another burn wound was induced with touching the customer-made tip of the soldering hot iron at 250°C for 30 second in the backside of rat under deep anesthesia. Thereafter, all animals were divided into three groups Normal control, AngioHealix® treated and Positive control (Betadine® / Silverex® treated). After that, the assessments were conducted to determine the wound healing properties of test drug, AngioHealix® in compare to normal control and positive control like Wound Contraction Size, Time Course Study, Tensile Strength of wound, different molecular markers, histopathological study. AngioHealix® showed 81.5 mm^2 wound contraction within 9 days, while in that same time span Betadine® contracts wound size up to 61.68 mm^2 and untreated control repaired only 40.29 mm^2. This study showed AngioHealix® with promising therapeutic actions in wound healing processes in both wounds in animals. Hence, it may be assumed that AngioHealix® may be a promising wound healing topical solution in near future.

Keywords: Antihelix®, Thiopentone sodium, Betadine®, Silverex®, Burn wound.

OR/ST4/0016

Real-world Observational Study to Assess the Safety of Escitalopram in Patients with Major Depressive Disorder in India

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Escitalopram is valued by many psychiatrists for treating major depressive disorder (MDD). Despite of demonstrating efficacy in clinical trials, it is associated with multiple adverse events (AEs) including headache, dizziness, dry mouth and weight gain. A case of akathisia leading to suicide attempt has also been reported. Since clinical trial data is based on narrow inclusion criteria, it is necessary to evaluate antidepressants in real-world. This analysis evaluated the safety of escitalopram in clinical practice. This is an ongoing observational study of escitalopram in patients with MDD in India. Study outcomes included solicited, unsolicited, and serious AEs. The study was approved by Institutional Ethics Committee of LTMMC, Mumbai (ECR/266/Lokmanya/Inst/MH/2013RR-16). Data from 79 patients was included in safety analysis. Overall, 98.7% (n=78) of patients reported 210 AEs, of which 208 were solicited and two were unsolicited AEs of giddiness (n=1) and irritability (n=1). Relapsed patients reported 43/201 AEs. Most frequently observed AEs were insomnia (45.6%), nausea (41.8%), and anorexia (25.3%) (**Table**). All the AEs were reported to have causal relation with escitalopram. Most of the patients reported AEs of Grade 1 (n=88) or Grade 2 (n=78) intensity. There were no Grade 5 AEs or AE-related drug discontinuations. Although multiple AEs were reported in the study, most of them were consistent with the known safety profile of escitalopram. There were no suicidal attempts or hospitalizations. Escitalopram is associated with AEs of mild intensity, and indicates the need for continued safety evaluation in the real-world.

Keywords: Clinical study, Depression, Escitalopram, India, Major depressive disorder; Real-world, Safety

OR/ST4/0019

Pattern for occurrence of poison cases and its outcomes at a tertiary care teaching hospital

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Abstract: Toxin is a substance capable of causing death or serious debilitation. Poisoning with various substances is common everywhere which is a major problem all over the world. The mortality and morbidity vary from country to country. The main aim is to know the pattern for occurrence of poison cases and its outcomes. To estimate the prevalence of suicidal, accidental and drug overdose cases. Determining the causative agent. Complications due to the poisoning was assessed. Study method carried out was prospective study. All the cases admitted to the emergency department due to poison were evaluated. Details regarding demographic parameters, present clinical history, past history, agents and routes of intake, symptoms and risk factors were collected. Duration between ingestion and time of admission was noted. Patients were monitored and changes in their condition were observed for each day. As per our study suicidal cases were higher than accidental. Adolescents were more prone to suicides than other age groups. According to our analysis, married women (53%) were undergoing depression leading them to attempt suicide followed by farmers. Scorpion bite (28%) poisons were high in accidental poisons where as in suicidal poisons, Organophosphate were highly prevalent. Drug over dose was observed in 12% which increased their length of hospital stay and outcome found was permanent organ damage. Children were only observed in accidental poisoning. The higher the duration between ingestion and hospital admission, the greater the chance of deleterious effect on organs. The earlier the initial finding, specific antidote helps to recover faster.

Keywords: Poisoning, Suicide, Antidote, Drug overdose, Toxin, Pesticides.

OR/ST4/0021

Apocynin: A potential moiety that can treat the underlying AD pathology and symptoms

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Abstract

Learning and memory are inherently important to our daily lives and are indeed the defining features of human species; which are taken away by Alzheimer's disease (AD). The exact cause of the disease still remains unknown, but a lot has been unearthed to call AD a multifactorial disease. The world demographics shifting towards geriatric, available treatments offering only symptomatic relief, failed metamorphosis of promising pre-clinical drug into clinical phase, all these point towards the pressing need of a new drug with totally new pharmacological approach. The present work evaluated apocynin, a phyto-active in $A\beta_{1-42}$ induced AD model. In this study male wistar rats were subjected to intrahippocampal $A\beta_{1-42}$ administration using stereotaxy and treated per-orally with Donepezil, graded doses of Apocynin, for 28 days and a sham control group. The model explored the potential of apocynin by evaluating its role in neurobehavioral task, anti-oxidant potential, membrane peroxidation, inflammatory parameter, $A\beta_{1-42}$ load, apoptotic marker, neuroprotection offered, neurogenesis and mitobiogenesis. The results depict that apocynin restored antioxidant enzymes.

Additionally, it reduced membrane peroxidation, inflammation, peptide load, and apoptosis. Further it bestowed neurogenic effect by enhancing proliferation and differentiation of the neuronal stem cells, thus instigating adult hippocampal neurogenesis. Moreover, Apocynin also offered additional neuroprotective effect by modulating the master regulator of mitobiogenesis PGC-1α; promoting mitobiogenesis, restricting the mitochondrial damage and subsequent mitochondrial dysfunction due to peptide administration. Our data reveals that apocynin works on multiple levels revealing its nootropic, neuroprotective, anti-inflammatory, and anti-oxidant potential in treating the underlying multifactorial AD etiopathology.

Keywords: Alzheimer's, Mitochondrial dysfunction, Anti-oxidant, Neurogenesis, Mitobiogenesis, Neuroprotection, Anti-inflammatory

OR/ST4/0027

Neurotoxicity induced by selected food additives used in energy drinks in rat pups: Insights from Insilco, invitro and in vivo studies

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Abstract Food additives used in energy drink evidence showed hyperactivity effects in brain but the individual effect and the combined effect were still in predicament. The present research work aimed to evaluate the neurotoxicity of selected food additives in rat pups and to enumerate the probable mechanism involved in neurotoxicity. In the present study, pregnant rats were divided into 6 groups. Pregnant rats were treated with selected food additives at high doses from gestational day-3 to postnatal day-15. After parturition on PND 21, behavioural changes were assessed using Rotarod test, active avoidance test and elevated plus maze test. Epinephrine and acetylcholine levels were estimated in rat brain tissue on PND 30, 45 and 60. Further, Neuronal oxidative stress markers like lipid peroxidation, catalase, superoxide dismutase and glutathione peroxidase were estimated in brain tissue on day 30 and day 60. Finally, histopathological studies were carried out in brain hippocampal region. Significant alteration in behaviour like memory, cognition and motor activity was observed in food additive treated rat pups. Increased lipid peroxidation and decreased antioxidant enzymes were significant in TAU and CF groups. Further in silico studies were carried out, where GLUR showed high binding affinity to specific receptor targets, GABA-A and NMDA1 receptors and specific enzyme targets MAO-A and MAO-B neurotransmitter metabolic enzymes compared to caffeine hinted the decrease in neurotransmitters correlating in vivo studies. The present results corroborate that the food additives at the selected dose and combination induced neurobehavioural and neurotransmitter alterations in rat pups.

Keywords: Energy drinks, neurobehavioural alterations, neurotransmitters, oxidative stress markers,ratpups.

OR/ST4/0029

Agmatine improves the behavioral phenotype and neurochemical dysregulation associated with 3-nitropropionic acid-induced Huntington's disease in rats

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Abstract Huntington's disease (HD) is a progressive neurodegenerative disease characterized by motor incoordination, cognitive impairment, and psychiatric complications with gradual loss of GABAergic neurons with no disease-modifying strategies. Agmatine is a novel neurotransmitter in the brain reported to possess neuroprotective properties. The present study was designed to examine the influence of agmatine on behavioral, biochemical, and molecular aspects of HD. A mitochondrial toxin, 3-nitropropionic acid (3-NP) was used to induce HD-like symptoms in rats like motor incoordination, memory impairment, neuro-inflammation, and associated behavioral complications like anxiety and depression-like behavior. Rats were pre-treated with 3-NP (20 mg/kg, i.p) for consecutive 4 days and then continued on agmatine treatment (10-40 µg/rat, i.c.v.) up to 21st day of the treatment protocol. 3-NP-induced cognitive impairment was associated with enhanced agmatinase and reduced ADC expression resulting in a decline in agmatine levels in the striatum, hippocampus, and prefrontal cortex. Further, the 3-NP injected rats showed an increase in, IL-6, and TNF-α and a reduction in BDNF immunocontent within these brain areas. Agmatine treatment not only improved the 3-NP induced motor incoordination, beam walking, rota-rod performance, and learning and memory impairment but also normalized the GABA/glutamate levels as well as the neurochemical alteration in discrete brain areas. Similarly, various agmatine modulators, which increase the endogenous agmatine levels in the brain like L-arginine (Precursor), amino guanidine (Diamine Oxidase inhibitor), and arcaine (agmatinase inhibitor) also demonstrated similar effects. The study proposed agmatine-based therapies in the treatment of HD and associated motor incoordination and cognitive complications.

Keywords: Agmatine, Huntington's Disease, 3-nitropropionic acid, motor incoordination, neuropsychiatricsymptoms

OR/ST4/0030

Assessment of in Vivo Anticancer Activity of Sphaeranthus amaranthoids burm. f against Ehrlich's Ascites Carcinoma (EAC) Cell Line

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Abstract Cancers are characterized by unchecked cell proliferation. Radiotherapy, chemotherapy, hormone therapy, and surgery are currently available cancer treatment methods, all of which have unfavorable side effects. New drugs for the treatment of cancer are difficult to develop because of their fault-finding side effects. As a result, researchers are looking for noble substances in nature to treat cancer. Therefore, the goal of the current study is to determining the antiproliferative effect as well as the molecular signaling of apoptosis using the extract of Sphaeranthus amaranthoids burm. f in the Ehrlich Ascites Carcinoma (EAC) cell line. The hemocytometer was used to measure the suppression of cell growth, and the florescence microscope and Hoechst-33342 stain were used to study cancer cell death. The results were confirmed by DNA fragmentation and the expression of specific cancer-related genes using PCR analysis. In hemocytometer observation, the extracts exhibited respective cell growth inhibitions of roughly 59.54±2.56% and 50.66±2.89%, whereas conventional anticancer medication Bleomycin demonstrated a growth inhibition of 76.43±1.78%. Under a fluorescence microscope, morphological changes revealed nuclear condensation and fragmentation, this is an indication of apoptosis. DNA laddering in EAC cells that had been exposed to Sphaeranthus amaranthoids confirmed the onset of apoptosis. Up regulation of the tumor suppressor gene P53 and down regulation of antiapoptotic gene Bcl-2 enumerate apoptosis induction. Therefore, recent study showed that methanolic extract of Sphaeranthus amaranthoids burm. f had antiproliferative activity against the EAC cell line and may be a powerful source of anticancer drugs for the treatment of cancer.

Key Words: Ehrlich Ascites Carcinoma, Cheiranthus amaranth ides Burfi, antiapoptotic, Hoechst-33342.

OR/ST4/0032

Evaluation of anti-diabetic activity of ethanolic extract of Cleome gynandry L. fruit in streptozotocin-nicotinamide induced type II diabetic rats

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Abstract Cleome gynandry (L) (Family: Cloacae) is referred as spider flower, different Gynandrous species are often discovered in Indian states. it's used for its dietary and antioxidant characteristics in numerous traditional systems and it's utilized in several illnesses like seizure, irritable bowel syndrome, in protozoa and worm infections. The current research work was designed to evaluate the anti-diabetic activity of ethanolic extract of Cleome gynandry L. (EECG) fruit in streptozotocin-nicotinamide (STZ-NIC) induced type II diabetic rats. Type II diabetes was induced by administration of STZ (60 mg/kg, i.p.) after 15 min of NIC (120 mg/kg i.p.) administration. The diabetic rats were treated with EECG (200, 400 and 600mg/kg, p.o., respectively) for 28 days. Blood glucose, SGPT, SGOT, blood urea, creatinine, haemoglobin, total cholesterol, triglyceride, LPO, GPX level were considerably reduced in diabetic rats treated with EECG. However, body weight, HbA1c, CAT, SOD, GSH, hexokinase, Liver glycogen, G_6P were significantly raised in diabetic rats treated with EECG. Regeneration of pancreatic beta cells in treatment groups was shown in histopathological studies. GC-MS analysis confirms the presence of phenol, Trans-phytol, β-sitosterol, Clenbuterol, heptatriene, eugenol in EECG. Results concluded that EECG may be useful in treating type II Diabetes mellitus with no visible signs or symptoms of toxicity and comparable to that of a standard drug Glibenclamide. The traditional use the selected plant part used to treat type II diabetes is revealed by the laboratory results.

Key words: Cleome gynandry (L), STZ-NIC, Type II diabetes, Clenbuterol, Heptatriene, GC-MS.

OR/ST4/0033

In-silico Investigation of Phytoconstituents from Plumeria obtusa and Sansevieria cylindrica Plants for Anti-venom Activity Against Snake Venom

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Abstract Health threat posed by snake bite is one of the most overlooked areas of active research resulting in deaths of thousands of people every year in many impoverished nations. Therefore, improvement of available therapeutic options along with development of other treatment choices is important for snakebite management which will could help in reducing the mortality and morbidity. Taking this in view, the in-silico study was conducted to investigate the interaction of phytoconstituents from Plumeria obtusa and Sansevieria cylindrica plants with various proteins for assessment of anti-venom activity against snake venom. A protein data bank was searched for various important enzymes found in different snake venoms, and were saved in the PDB file. The plant phytochemicals were selected from published literatures. Structure of phytoconstituents were drawn using Chem Draw software and converted to SDF files. The selected proteins and phytoconstituents were subjected to docking using the iGEMDOCK software. The docking results were then validated through Autodock Vina and the interactions were visualised through discovery studio visualizer. Docking results were also compared with selected standard inhibitor of docked proteins. Many plant phytoconstituents showed good binding affinity and were able to form H-bonds, alkyl, π-alkyl, Van der Waals, and π-sigma bonds with the active-site residues of 1B41, 1CJY, 2JGA, 4TKX, 4UFQ, 5NJB proteins. Docking result interpreted the possible pharmacological activity of plant phytoconstituents against the snake-venom through inhibition of respective macromolecules.

Keywords: Molecular docking, Plumeria obtusa, Sansevieria cylindrica, Snake venom, Enzymes.

OR/ST4/0034

Comparative study of nootropic effect of acetylcholine esterase inhibitor in combination with NMDA antagonist and with SSRI

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Abstract Loss of cholinergic neurons and reduced choline acetyltransferase activity in cerebral cortex and hippocampus are consistent with findings in Alzheimer's disease. Cholinesterase inhibitors (donepezil, galantamine, rivastigmine) restore cortical concentration of acetylcholine; nicotinic acetylcholine receptor sensitizers (galantamine) have similar effect. Memantine protects cortical neurons from toxic effects of chronic over-exposition to glutamate. Current treatment options address biochemical sequelae of neuronal loss in certain neuronal populations; however, do not target underlying pathology. The SSRIs enhances BDNF gene expression and serotonergic system is implicated in neurobiological control of learning and memory. Thus, available literature substantiates idea of combination of SSRI with approved drugs for AD treatment as promising treatment option for cognition enhancement. This study indicates repeated administration of SSRI can be effective in AD management same as NMDA antagonists. In present investigation, Rivastigmine-Memantine and Rivastigmine-Fluoxetine combination treated groups demonstrated significant positive effect on learning and memory. Hence with reference to 'dendritic arborization' it is essential to focus research on role and involvement of SSRI in AD pathology. From this study we can conclude that, all treatment groups meet major criteria for nootropic activity. However; combination treatment groups i.e., Rivastigmine-Memantine and Rivastigmine-Fluoxetine are found to be more effective in all exteroceptive (Elevated plus maze, Morrie's water maze) as well as interoceptive (Scopolamine induced amnesia, High fat diet induced dementia) behavioural model; well-grounded by histopathology. The present study reinforces idea of alternative therapy using combination of SSRIs with AchE inhibitors, which can be considered for delaying progression in early stage of disease.

Keywords: Alzheimer's disease, Cholinesterase inhibitors, Rivastigmine, Fluoxetine, Memantine,Dendriticarborization.

OR/ST4/0035

TO STUDY THE PREVALENCE OF DEPRESSION AND ANXIETY AND ITS ASSOCIATION WITH QUALITY OF LIFE IN PATIENTS WITH HEAD AND NECK CANCER AT TERTIARY CARE HOSPITAL

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ABSTRACT

The present work is aimed at study the pprevalence of depression and anxiety and its association with quality of life in patients with head and neck cancer in a tertiary care hospital .Through this study we got to know the relation between depression ,anxiety and quality of patient suffering from head and neck cancer .Various depression and anxiety rating scale such as Hamilton Depression Rating scale ,Hamilton Anxiety rating scale and World Health Organization Quality of Life Bref scale were used and results were statistically compared .The various parameters such as age ,gender ,occupation ,co-morbidity etc were analyse and results were we got were male population suffer more as compare to female population and patients with low economic status along with co-morbidity seems to have the highest rate of disease presence .The combined Multimodality Treatment adopted in head and neck cancer patients correlated with higher depression scores because of the increasing adverse effects of the treatment and increased cancer burden .Anxiety are more commonly seen in the female patients .The quality of life scores were inversely related to the prevalence of depression and anxiety in head and neck cancer patients.

KEY WORDS: Prevalence, Hamilton depression scale, Hamilton Anxiety rating scale.

OR/ST4/0036

Molecular docking studies of Costus Specious for their potential antidiabetic activity using Argus lab 4.0.1

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ABSTRACT People are increasingly turning to plant-based therapies as an alternative or complementary medication, because of their availability, economic price, safety and effectiveness. comprehending the protein-ligand interaction is a crucial first step in the drug discovery process. The development of innovative pharmaceuticals can be expedited and made less expensive by combining computational and experimental methods. The current study's objective was to use in silico molecular docking research to find leads of Costus Specious having potent anti-diabetic activity. These substances were examined using a variety of in silico methods for molecular docking utilising ArgusLab and Swiss ADME, drug likeness properties against particular protein receptors, drug likeness properties and pharmacological activity.Through the use of molecular docking studies, it was possible to identify leads with favourable binding energies, poses, and hydrogen bond interactions, all of which supported the successful regulation of the receptor.Many compounds were found to be the most potent compounds based on the dock score and amount of hydrogen bond interactions. The findings showed that the majority of the compounds under investigation had favourable drug-like characteristics. It was foreseen through in silico molecular docking research that the chemicals from the Costus Specious have substantial binding affinities and may be utilised as a screening method to select the best final medication. We can proceed the current investigation by utilizing the best selected molecule for further In-vitro and in – Vivo pharmacological evaluation.

Keywords: Costus Specious, Molecular Docking studies, Diabetes, Drug likeness, Binding Energy

OR/ST4/0038

Mesenchymal Stem Cells as Managing Approach for Diabetic Wound: Preclinical Study

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Abstract

Diabetes mellitus is a condition that is rapidly increasing in prevalence around the world, and diabetes individuals who develop unhealing foot ulcers must have their legs amputated. In this work, we looked at how human dental pulp stem cells (hDPSCs) helped pressure wound animals heal from diabetic wounds. In order to create lesions on the paws of the diabetic rats, streptozotocin was first used to induce diabetes in male Wistar rats. The mice were divided into 3 groups (N=6): the control group, hDPSCs given in single doses, and hDPSCs given in multiple doses. The data were analysed for wound size reduction and re-epithelialization of the injured tissues after the study period of 28 days. Reduced wound areas were visible in all study groups. On day 5, however, the test groups began to perform better than the untreated group. A histopathological investigation revealed that both single and multiple dose groups had much less tissue damage and higher re-epithelialization than the disease control group. In the current investigation, we came to the conclusion that hDPSCs have antibacterial activity, stimulate wound healing in diabetic rats, and improve re-epithelization. In a pressure wound Wistar rat model, hDPSCs can improve wound healing in both single and multiple doses. Multiple injections, nevertheless, produced greater outcomes. This work has significant clinical implications because these findings can be tried in humans to lessen the severity of diabetic foot ulcers.

Keywords: Human dental pulp stem cell, Diabetic wound, Wound size, Re-epithelization.

OR/ST4/0041

Evaluation of Efflux Pump Inhibitors with Antimicrobial Agent

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Abstract

Antibiotic resistance is one of the most dangerous conditions nowadays, where leading causes can be misuses and inappropriate prescribing of them, along with other factors, it leads to antimicrobial resistance. Multidrug-resistant strains like Methicillin-resistant S. aureus causing significant morbidity and mortality due to resistance. This study was aimed to overcome from the resistance of linezolid by combining it with established natural efflux pump inhibitors designed to target efflux pumps, one of the leading mechanisms of resistance. Few efflux pump inhibitors like Piperine, Thymol, Reserpine and Silymarin were combined with Linezolid. The bacterium strains used in studies were S. aureus ATCC 29213 and MRSA. Alone Linezolid had 2.8 µg/ml MIC, individually Piperine, Reserpine and Thymol showed 25, 50, 140 µg/ml MIC respectively, while alone Silymarin had no effect when Linezolid was combined with Piperine, Reserpine, Thymol, and Silymarin, they showed 0.75, 1, 1.5, 1.6 µg/ml MIC respectively in MRSA, while in S.aureus ATCC 29213 Alone Linezolid had 1.8 µg/ml MIC, individually Piperine, Reserpine and Thymol and Silymarin showed 15, 40, 100 and 510 µg/ml MIC respectively, while alone had no effect, when Linezolid was combined with Piperine, Reserpine, Thymol, and Silymarin, they showed 0.75, 1, 1.5, 1.6 µg/ml MIC respectively, concluding that combinations of efflux pump inhibitors reduce MIC of Linezolid.

Keywords: Antibiotic resistance, Antibiotic classifications, Mechanism of antibacterial resistance, Efflux pumps, Efflux pump inhibitors, Minimum inhibitory concentrations.

OR/ST4/0044

Agmatine-NPY interplay in Paraventricular Nuclei regulates Pubertal Endocrine Physiology

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Puberty onset is a complex, organized biological process with multilevel regulation, and its physio-pathological mechanisms are yet to be fully elucidated. NPY is known regulator, however the role of agmatine in neuroendocrine physiology of puberty is unknown. To study the effect of agmatine on puberty and evaluation of neuropeptide Y involvement in it and associated conditions. On PND 29 to 35 & PND 45-52 daily administration of agmatine (40,80mg/kg; i.p.) in pre- & post-puberty male/female rats was done Onset of puberty was examined through body weight, age of vaginal opening, oestrus cycle, testis development & plasma hormone levels. Estimation of LH, FSH, ACTH, TSH, oestrogen, progesterone, testosterone, T3 & T4 level in plasma by ELISA. The involvement of NPY was done by implying NPY (peptide) agonist and antagonist - BIBP3226 (1mg/kg). Testes development, vaginal cytology and estrus microscopy verified normal pubertal onset in all the experimental groups. Peripheral administration of agmatine have significant influenced the hormonal levels in HPG axis in pre- & post-puberty male/female rats. NPY receptor antagonist BIBP2336 have shown significant reduction in the effect of agmatine 80 mg/kg on release and inhibition of hormones in HPG axis.These data suggest the influence of agmatine within paraventricular nucleus on release and regulation of hormones from HPG axis. Furthermore, our study also highlights the implication of NPY within PVN in the regulatory effect of agmatine in pre- and post-pubertal animal. Thus, this interplay can be novel therapeutic target for management of pubertal disorders.

Keywords: Puberty, Agmatine, Neuropeptide-Y.

OR/ST4/0045

Evaluation of Link Between Self-Ethanol Administration and Gut-Brain-Axis Dysregulation in Rat

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Abstract Chronic ethanol consumption significantly increases the risk of dying, becoming disabled, and experiencing health issues. It can also interfere with one's ability to work and cause one to become distant from their family. Alcohol consumption severely affect the structure and functionality of the gastrointestinal tract. Agmatine is a novel neurotransmitter critically involved in complications of alcoholism and abundantly present in gut mainly secreted by microbes. Aim of the study to evaluate the relationship between self-ethanol administration and gut-brain-axis dysregulation in rat in two bottle choice paradigm and the role of agmatine and probiotics in ethanol-induced dysbiosis. We administered alcohol for consecutive 7 days and observed the different parameters of anxiety in elevated plus maze, along with ethanol intake, food intake, body weight, locomotor behaviors, etc. during alcohol withdrawal on next day. Also, we estimate the fecal microbial level before and after treatment of agmatine and probiotics. Agmatine (20–40 mg/kg, i.p.) and probiotics (1.0-2.0 ml/rat, oral) treatment significantly decreased ethanol intake in the current study's two-bottle choice paradigm and restored the normal gut microbial flora. Agmatine and probiotics at these doses attenuated all the changes including food intake, body weight loss, etc. Similar results were found in administration of sub-effective combination of agmatine and probiotics. Result of the present study reveals that self-ethanol administration disrupts the gut-brain-axis and agmatine and probiotics are potential therapeutic targets that could revert ethanol-induced dysbiosis.

Keywords: Alcoholism, gut-brain-axis, agmatine, probiotics, Lactobacillus.

OR/ST4/0051

Anti-Neurodegenerative effect of *Cassytha filiformis* on Scopolamine induced memory impairment on rats

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Abstract *Cassytha filiformis*is (CF) a traditional herbal medicine widely used in many parts of the world to treat cancer, African trypanosomiasis, epilepsy, hair growth, reduce labor pain. And in the current research world also, the studies were conducted for Anti-oxidant activity, Anti-Cancer, Anti-Trypanosoma, Anti-Hypertension, etc. However the studies were not conducted on Anti-Neurodegenerative activity on *CF*. The aim of this study is to evaluate the anti-neurodegenerative effect of CF on scopolamine-induced cognitive impairment. Also this study aimed to focus the possible mechanism on cholinergic system associated with anti-oxidant effects. The study was conducted on albino wistar rats for seven days. Scopolamine (1 mg/kg) was injected intraperitonially to induce the cognitive deficiency. After one hour of the scopolamine injection the donepezil (3 mg/kg) was administrated orally for the positive control group, Methanolic extract of CF (250mg/kg and 500 mg/kg) was administrated orally for test groups in all the seven days. Learning and memory status were evaluated by Morris water maze. Oxidative parameters including Superoxide dismutase, Catalase, Lipid peroxide and Nitric oxide as well as biochemical parameters including AchE, NMDA and Dopamine were performed. Histopathology of hippocampus also performed. In the Morris water maze task, CF treatment group shown the enhanced learning and memory which was not observed in negative control – scopolamine induced group. In the oxidative study results,

lipid peroxide, Nitric oxide levels are decreased in CF treated groups when compared to scopolamine induced group. Superoxide dismutase and Catalase are increased in the CF treatment when compared to scopolamine induced group. The CF treatment increasing the Acetylcholine level and dopamine levels. These findings are showing the anti-neurodegenerative properties of CF through the cholinergic modulation and anti-oxidant properties in dose dependent manner.

Keywords: *Anti-Neurodegenerative property, Cassytha filiformis, Scopolamine, NMDA, Acetylcholine*

OR/ST4/0056

NEUROPROTECTIVE EFFECTS OF TERPENOIDS AGAINST STREPTOZOTOCIN-NICOTINAMIDE-INDUCED DIABETIC RATS: AN IN SILICO, IN VITRO AND IN VIVO STUDY

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ABSTRACT: The effects of diabetes in the nervous system results in a series of neurochemical, neurophysiological and structural abnormalities lead to diabetic encephalopathy. The present study focused to evaluate the neuroprotective effects of terpenoids in streptozotocin & nicotinamide -induced type-2 diabetic rat model. The in-silico studies were carried out for 68 terpenoids using AutoDock 4.2. The in vitro cholinestrerase, alpha amylase enzyme inhibitory assays were perfomed using standard procedures. For in vivo neuroprotective studies, male wistar rats were divided into five groups each group comprised of six animals. Treatment groups were received low dose and high dose α-Bisabolol 100 and 200 mg/kg respectively, and the standard groups received rivastigmine 2 mg/kg, p.o. and metformin group 100 mg/kg, p.o. for 30 consecutive days. Administration of nicotinamide (110 mg/kg, i.p.) and streptozotocin (45 mg/kg, i.p.) induced the Type 2 diabetes in all groups except the control. The behavioural assessments such as rectangular maze, Morrie's water maze, and open field test were performed and biochemical parameters such as acetylcholinesterase levels and enzymatic and non-enzymatic antioxidant levels were estimated from brain homogenates. Treatment of diabetic rats with α-Bisabolol was lowered blood glucose level, improved spatial recognition memory in behavioural assessments in a dose dependent manner. Furthermore, α-Bisabolol at a dose of 200 mg/kg reduced hippocampal cholinesterase level, and increased the concentration of both enzymatic and non-enzymatic antioxidants. It can be concluded that α-Bisabolol could act as a potential drug candidate in the management of diabetic Alzheimer's disease.

Keywords: Diabetic Alzheimer's, α-Bisabol, Cholinesterase, Terpenoids.

OR/ST4/0059

Pharmacological evaluation of polyherbal extract obtained from berries and flaxseed for antihypertensive activity and cardiovascular activity

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Abstract
Hypertension or high blood pressure is a medical condition which is chronic and characterized by elevation of blood pressure in the arteries. The berries such as red raspberry, cranberry, blueberry and strawberry and flaxseed were used in research study. In the experimental part the aim is pharmacological evaluation of polyherbal extract obtained from berries and flaxseed for antihypertensive activity and cardiovascular activity. The extraction of berries was held by maceration technique then followed by column chromatography (C-18) to isolate the compounds by using polarity varying solvents methanol and water. The phytochemical study was done to know about the various active phytochemical constituents, its purity found in PEBF extracts. To examine the extent of toxicological profile and safety of PEBF-F1 formulation after testing of its physicochemical properties was done by acute oral toxicity (OECD guideline 423) at a dose of 500, 1000, 2000 and 5000 mg/kg b.w. p.o. and subacute oral toxicity (repeated dose toxicity (OECD guideline 407) at a dose of 5000 mg/kg b.w. p.o. in male wistar rats. Cholesterol induced hypertensive rat model (Egg-feed induced hypertensive rat model) was selected for study of antihypertensive activity of PEBF-F1 formulation on male wistar rats. During the experimental study it was observed that there was variation in the blood pressure levels of SBP, MBP and DBP and heart rate of male wistar rats in comparison with the standard drug Telmisartan 40 mg/kg b.w. Experimentally induced myocardial necrosis in rat model was selected for study of cardiovascular activity of PEBF-F1 formulation on male wistar rats. The study concludes that the berries and flaxseed have a potential effect on health benefits and they have a high range of flavonoids by phytochemical screening and stability studies are slight change due to conditions of climatic changes at room temperature. Hence, the study proves that the PEBF-F1 formulation which is a combination of polyherbalism has potential to lower down the blood pressure (hypotensive activity) and also disregards the side effects of synthetic drugs.

Keywords: Egg Feed Diet, Myocardial Necrosis, Polyherbalism, Berries, Flaxseed, Antihypertensive activity, Cardiovascular activity

OR/ST4/0060

Pharmacological Evaluation of Silver Nanoparticles of *Thunbergia Fragrans* for Its Neuroprotective Potential

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Abstract
The aim of the present study was to synthesize silver nanoparticles mediated by the extract of *Thunbergia fragrans* and evaluate its neuroprotective activity on rotenone induced Parkinsonism in rats. UV–visible spectroscopy, Fourier-transform infrared (FTIR), X ray diffraction (XRD), Scanning electron microscopy (SEM), Zetapotential and Particle size analyzer were used to characterize the silver nanoparticles synthesized used from *T. fragrans* leaf extract. SEM images showed the aggregation of AgNPs with a spherical shape and the average size of 16nm was determined by particle size analyzer. FTIR spectra showed prominent peaks at 2926, 2375.76, and 1384 cm−1 and UV-visible spectra showed an absorption peak at 425nm which indicate the formation of silver nanoparticles. rotenone was administered for 21days at the dose of 3mg/kg, chronic exposure to the chemical produced catalepsy, muscle rigidity and cognitive decline in rats. Levodopa was used as standard drug. Rota rod apparatus was used to evaluate muscle rigidity and novel object recognition test was used to study behavioural parameters. The hydroalcoholic extract of *T. fragrans* at 600mg/kg and AgNPs at 120mg/kg (high dose) showed significant reduction of Parkinson symptom in rotenone induced rats. These findings revealed the significant neuroprotective activity of *T. fragrans*. Hence more research into *T. fragrans* is needed to find out its complete pharmacological potential.

Keywords: *Thunbergia fragrans*, Pharmacology, Parkinson's Disease, Rota Rod, Nanoparticles.

OR/ST5/001

TO EVALUATE COMMUNITY PHARMACISTS' KNOWLEDGE, ATTITUDES, AND PRACTISES ON MEDICATION ADHERENCE PROGRAMS

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Abstract: Community Pharmacist plays an important role in any country as they take responsibility for the patient's medicine-related needs. Now a days community pharmacists' role has extended to various health care services such as medication synchronization program and medication therapy management to prevent medication non-adherence. To understand the concept of medication adherence programs the pharmacist should undergo training through attending workshops, continues pharmacy education programs. However, there are no studies conducted in India to assess the knowledge, attitude and practice of community pharmacist on medication adherence programmes. A cross-sectional survey-based study was conducted among community pharmacist for a period of six months. Community pharmacist were approached through personal visits, explained about the study procedure and enrolled in the study after obtaining written informed consent. A validated questionnaire was used to collect the demographic details and study specific data such as knowledge, attitude and practice of community pharmacist on medication adherence program. The questionnaire contained seventeen items for which community pharmacist need to score based on a five-point Likert scale. Descriptive statistics was used to present the response. A total of 96 community pharmacist participated in the study. A majority (80%) of them were males. Around 60% of the community pharmacist were having the experience of more than 20 years. A majority (90%) of the respondents were unaware of medication synchronization programs improving medication adherence. A very small proportion (10%) of the respondents agreed that medication synchronization might be useful in improving medication adherence and only 5% of respondents agreed that medication synchronization program improves overall health related quality of life in patients with chronic diseases. Community pharmacist were having limited understanding and positive belief on medication adherence program. Therefore, there is a need for community pharmacist to improve practicing skills to improve medication adherence.

Key words: *Medication adherence, non-adherence, medication synchronization programs, Knowledge, Attitude, Practice.*

OR/ST5/002

SURVEILLANCE OF ADVERSE DRUG REACTIONS IN A TERTIARY CARE HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY

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Abstract: Adverse drug reactions are well-known risks of drug therapy and major causes of mortality and morbidity in both inpatient and outpatient patients. The goal of the study is to examine the clinical spectrum of adverse drug reactions that occur in a hospital, taking into account factors including clinical presentation, causality, severity, and preventability. A prospective observational study was conducted for a period of 6 months in a tertiary care hospital. The study included 317 patients who satisfied the inclusion criteria. Using the necessary validated measures, detected and suspected ADRs were evaluated for causality, severity, predictability, and preventability. Throughout the course of the study, a total of 38 ADRs were observed, recorded, evaluated, and reported. The majority of patients with ADRs were over 60 years old (53.3 %). Diuretics were the medication class most frequently linked to ADR, accounting for 28.9% of events. The majority of the ADR reports were caused by Furosemide (23.7%) and Hypokalaemia was the most frequently reported adverse drug reaction, occurring in 8 (21.1%) cases. An analysis of causality showed that 92.1 percent of ADRs were possibly drug-related. According to an assessment of the severity of the suspected ADRs, 23.7 percent of the suspected ADRs were mild and 76.3 percent were moderate in intensity. When the preventability of ADRs was evaluated, it was shown that 26.3 percent of ADRs were likely preventable. The findings of this study revealed that adverse drug reactions were important contributors to the subsequent health issues that arise after hospitalisation. There is a need for healthcare workers to be more aware of the possibility of adverse drug reactions leading to hospital admissions because the majority of these adverse reactions are predicted. Thus, in order to reduce drug-related morbidity, health care practitioners must be made aware of the significance of ADR reporting through awareness campaigns.

Keywords: *Adverse Drug Reactions, causality, severity, Preventability.*

OR/ST5/003

UTILIZATION PATTERN OF ANTIDEPRESSANTS AMONG PATIENTS VISITING PSYCHIATRIC OUT-PATIENT CLINIC OF A TERTIARY CARE HOSPITAL

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Abstract: Antidepressants are a group of psychotropic medications that are used to treat depression. A very few studies have been carried out in India, which have evaluated the prescription pattern of psychotropic medications, particularly antidepressants. This prospective observational study aimed to assess the utilization pattern of antidepressants among patients visiting the outpatient clinic of the psychiatry department of a tertiary care hospital. Patients who visited the study site and fulfilled the mental and behavioural diagnostic criteria for depression were included in the study. The demographic and clinical details including drugs prescribed were collected and documented in a study-specific data collection form. The ratio of prescribed daily dose to defined daily dose (PDD: DDD) was calculated to assess the adequacy of antidepressant utilization among the study population. A total of 154 patients' data was collected and a

majority of patients were females (n=105, 68%). The mean (±SD) age of study participants was 39.5 (±12) years. A majority of patients were diagnosed with moderate depressive symptoms (n=103, 66.9%). Generalized idiopathic epilepsy and epileptic syndromes (n=12/35, 34.2%) were the most common co-morbid conditions observed. A total of 22 psychotropic drugs (antidepressants:9, and other psychotropics:13) were used among the study patients. A total of 150 patients received pharmacotherapy either as mono (n=70), dual (n=69), triple (n=10), or quadruple therapy (n=1). The median number of antidepressants prescribed per patient was two (IQR: 1-2). Amitriptyline (n=14, 9.3%) and clonazepam (n=8, 5.3%) were the most frequent antidepressant and psychotropic drugs used as monotherapy, respectively. Among nine antidepressants, escitalopram was used in slightly high doses (PDD: DDD ratio 1.6), whereas, sertraline, paroxetine, and desvenlafaxine were used in adequate doses (PDD: DDD ranging between 1 and 1.1). Other five antidepressants, fluoxetine, duloxetine, amitriptyline, imipramine, and mirtazapine were used in inadequate doses (PDD: DDD ranging between 0.25 and 0.5), suggesting underutilization of these antipsychotics. Our study findings reveal the need for suitable interventions to optimize the prescribing pattern of antidepressants.

Keywords: *Antidepressants, Prescription pattern, Depression, Mental Health.*

OR/ST5/004

METOCLOPRAMIDE INDUCED CARDIAC EFFECTS: A CASE REPORT

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Abstract: Metoclopramide, widely used for its anti-emetic properties, antagonizes the action of the dopaminergic receptors, thereby preventing PONV. However, it is effective only in parturient under spinal anaesthesia. The mechanism of action of the drug is multifactorial. We, herein, present a case of an antenatal mother who developed cardiac effects after being injected with metoclopramide intravenously for elective LSCS. Supportive care was provided, and emergency LSCS was done in view of maternal resuscitation. The procedure was uneventful, and the patient stabilized gradually, and was given digoxin and trimetazidine on discharge. The ADR was classified as life threatening, according to the WHO scale. Customary use of the drug compels the study about the clinically relevant adverse effects to provide information for an evidence-based approach as the risk is for both the mother and foetus and in most cases the adverse effects in pregnancy are underrepresented as most clinical trials prefer healthy volunteers than pregnant women unless and until necessary. While most literatures report only bradycardia, our case developed both tachycardia and bradycardia followed by unresponsiveness. Our case report aims to provide an alarm to remain diligent in reporting such adverse reactions and to prevent further episodes of such reactions.

Keywords: *Metoclopramide, Antenatal, Adverse effects*

OR/ST5/005

ASSESSMENT AND MANAGEMENT OF HOSPITAL ACQUIRED INFECTIONS IN A TERTIARY CARE HOSPITAL

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Abstract: Hospital Acquired Infection (HAI) is an infection acquired in hospital by a patient who was admitted for a reason other than that infection. Despite progress in public health and hospital care, infections continue to develop in hospitalized patients and is need to be considered. This study was conducted to assess hospital acquired infections and its management and to calculate the prevalence rate in a tertiary care hospital. A cross-sectional study of six months was conducted. All the data were documented and analyzed based on a standard protocol. Collected data were entered into Microsoft Excel and statistical analysis was performed by using Microsoft Excel and SPSS Version 25. The prevalence rate of hospital acquired infections was found to be 6.1%. Out of 122 patients included in the study, 70% were male and 30% were females. The highest distribution of HAI was found to be Bloodstream Infection (BSI) (41.80%), followed by Hospital-acquired pneumonia (HAP) (17.20%), Respiratory tract infections (RTI) (13.90%). Most common causative organism was found to be as Klebsiella pneumonia (15.46%). According to lab investigations, Leucocytosis (61.47%), Neutrophilia (59.83%), Lymphopenia (78.68%), Hyperglycaemia (53.3%) and elevated level of CRP (81.13%) was found in majority patients. Most of the patients were treated with Meropenem (17.55%), Linezolid (15.98%) with other drugs. Majority of patients stayed in hospital for >=7 days (74.60%). Hospital acquired infections pose a serious threat to health care settings. Their contribution to the cost of hospitalization and mortality rate is significant. Antibiotic resistance surveillance, antimicrobial stewardship programmes, combined with tracking patterns of prescribing can be the foundation of hospital infection control programmes.

Key words: *Hospital acquired infections (HAI), causative organism, prevalence.*

OR/ST5/007

ASSESSMENT OF COMMON NON-ADHERENCE FACTORS FOR INHALED MEDICATIONS IN ASTHMA AND COPD PATIENTS

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Abstract: Inhaled medications are the cornerstone for the treatment of Asthma and Chronic obstructive pulmonary disease (COPD). Adherence can be influenced by many factors such as patient preferences, education, awareness, ease of use, cost, etc. It is thus fundamental to identify and address the factors in order to improve adherence and outcomes. A study was conducted to assess the common non-adherence factors for inhaled medications in asthma and COPD patients. A prospective observational study was conducted on asthma and COPD over a period of 6 months. A total of 150 patients who were users of inhaled medications were enrolled. Patients were interviewed and administered with Inhaled Medication Adherence Questionnaire (IMAQ) on the baseline, 1st, and 2nd month. The identified factors were classified based on the five dimensions of adherence instrumented by the World Health Organization (WHO). Our study observed factors affecting the adherence pattern in both groups based on the determinants of non-adherence according to the World Health Organization (WHO). Among these, 54% were attributable to socioeconomic reasons. Similarly, 38% were patient-related, 4.6% therapy-related, and 3.3% healthcare system-related. There were no patients in the clinical condition-related group due to study-related exclusion criteria. According to the study results majority of patients showed non-adherence due to socioeconomic related factors followed by patient-related factors. Various challenges associated with medication non-adherence have been explored extensively for decades and are well documented across the literature. In light of this, our study focuses on offering an overview of factors influencing adherence.

Keywords: *Asthma, COPD, Medication Questionnaire adherence, Chronic respiratory disorders, Nonadherence factors.*

OR/ST5/008

EVALUATION OF INFECTIOUS COMPLICATIONS IN KIDNEY TRANSPLANT PATIENTS RECEIVING INDUCTION AGENTS ANTI-THYMOCYTE GLOBULIN AND BASILIXIMAB.

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Abstract: Kidney transplantation is considered as dominant therapy for irreversible End-Stage Renal Disease, both in terms of quality of life as well as cost-effectiveness. The most commonly used induction agents are Anti-Thymocyte Globulin and Basiliximab, which nearly account for 70% of kidney transplant recipients' induction therapy. The present study was carried out to estimate the various infectious complications in Kidney Transplant patients receiving induction therapy with Anti-Thymocyte Globulin and Basiliximab. A total of 242 kidney transplant recipient files from the years 2017 to 2020 were analysed retrospectively. The data collection form included factors such as patient demographics, baseline comorbidities, native kidney diseases, type of induction agent, creatinine levels, and various infectious complications developed. The data were analysed using a software Social Statistics version 2021 through Chi-Square Test. Among 242 kidney transplant patients receiving ATG (37.6%) and Basiliximab (57.4%), there was a significant decrease in the creatinine associated with both of the induction agents. In patients receiving ATG, Bacterial infections such as UTI (21.35%), Pneumonia (11.65%), and viral infections such as Hepatitis (9.70%), CMV (8.73%), and BKV (3.88%) were predominantly found. Bacterial infections such as UTI (13.9%), URTI (9.93%), and viral infections such as CMV (18.54%), Hepatitis (3.97%), and BKV (3.97%) were the most commonly detected infections in Basiliximab administered patients. Geriatric patients with one or more comorbidities (75%) were found to be increasingly susceptible to infectious complications development. The probability of developing a wide range of infectious complications was significantly lower in patients receiving Basiliximab in comparison to ATG receiving patients.

Keywords: *Kidney Transplantation, Anti-Thymocyte globulin, Basiliximab, Bacterial Infections, Viral Infections.*

OR/ST5/009

PREVALENCE AND PREDICTORS OF PREDIABETES AMONG GENERAL PUBLIC OF MYSURU CITY

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Abstract: Early detection of prediabetes and intervention with lifestyle can prevent or delay the onset of diabetes in high-risk individuals. Community pharmacists are in a unique position to screen individuals to prevent illnesses such as type 2 diabetes mellitus. We conducted this prospective interventional study, for a period of six months, at selected community pharmacies to assess the prevalence and predictors of prediabetes. The general public of Mysuru city, who was not a known case of diabetes were included and screened for the risk of diabetes mellitus. Diabetic risk assessment was done using the Canadian Diabetes Risk (CANRSIK) Questionnaire. Based on the score obtained from CANRISK the study population was categorized as low (less than 21), moderate (21-32), and high risk (33 or above) of diabetes. A total of 431 individuals were screened for the risk of diabetes mellitus. Most of the individuals screened had a high risk (63.3%) followed by a moderate risk (29%) of developing prediabetes. The bivariate analysis revealed that male gender, age more than 45 years, body mass index more than 25 kg/$m^{2,}$ waist circumference more than 94 cm for men & more than 80 cm for women, and presence of high blood sugar (>150 mg/dL), presence of high systolic blood pressure (>120 mmHg), women who gave birth to a baby weighing more than 4.1 kg and high school education or less, are predictors of increased risk of diabetes mellitus. This study revealed that diabetes risk assessment at community pharmacies is an effective method of identifying individuals at risk of diabetes mellitus.

Keywords: *CANRISK questionnaire, diabetes mellitus, prediabetes, diabetes risk assessment*

OR/ST5/0011

INCIDENCE AND PREDICTORS OF DRUG-DRUG INTERACTIONS AMONG NEONATES IN A TERTIARY CARE TEACHING HOSPITAL

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Abstract: Drug-drug interactions (DDIs) are of particular concern in neonates due to immature organ systems. Therefore, it is important to screen the medications used in these special populations for the presence of DDIs to prevent any untoward drug-related events. We conducted this prospective observational study over a period of nine months with the aim of identifying the incidence and predictors of DDIs among neonates in a tertiary care teaching hospital. The case sheets and treatment charts of all the neonates admitted to the study site were prospectively reviewed and all the necessary demographic and clinical details were collected and documented. The DDIs were identified using the online source Medscape.com drug interaction checker. The identified drug interactions were documented and classified according to their severity. Among 200 neonates included in the study, a total of 134 neonates had potential DDIs. The incidence of DDIs among study neonates was 67%. A total of 72 drug combinations were involved in 262 DDIs. A majority of the identified DDIs were belonging to the category of minor (148, 57%), followed by monitor closely (92, 35%), serious (19, 7.3%) and contraindicated (3, 1.1%). Piperacillin and gentamicin (119, 45.4%) was the most frequent drug combination involved in DDIs. Neonates born through lower segment caesarean section ($p=0.0001$), neonates with appearance, pulse, grimace, activity, and respiration (APGAR) score less than 7 ($p=0.0001$), extremely preterm neonates ($p=0.0001$), extremely low birth weight neonates ($p=0.0001$), more than 16 days of stay in a neonatal intensive care unit ($p=0.0001$), more than three diagnoses (0.0250) and use of more than 5 medications ($p<0.0001$) were found to be the predictors of DDIs among our study neonates. The incidence of DDIs in neonates is high. The prescribers and clinical pharmacists must be vigilant in at-risk neonates while prescribing multiple medications to prevent adverse drug outcomes in these special populations.

Keywords: *Neonates, drug-drug interactions, predictors, adverse drug outcomes, drug-related events*

OR/ST5/0012

STUDENTS' PERSPECTIVES ON OBJECTIVE STRUCTURED CLINICAL EXAM AT JSS COLLEGE OF PHARMACY, MYSURU, INDIA.

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Abstract: The objective structured clinical exams (OSCEs) are the standardized tools that are used to assess the clinical skills and competencies of pharmacy students globally. OSCEs help in the evaluation of students' knowledge, skills, and behaviours using simulated clinical environments. It is important to endorse this novel method of assessment from students' perspectives. Therefore, we conducted this qualitative study to understand the students' perspectives on OSCEs at JSS College of Pharmacy, Mysuru. A validated, 14-item, 5-point Likert scale was used to capture the students' insights about OSCE. The responses namely; strongly agree, agree, no response/neutral, disagree, and strongly disagree were numerically coded as 5, 4, 3, 2, and 1 respectively. The data were analysed descriptively and presented as mean (±SD). A total of 271 students evaluated the OSCE. The mean (±SD) on all the four components of the OSCE evaluation scale namely; support prior to & during the OSCE, quality of OSCE cases, simulated patients & props, appropriateness of the skills evaluated & time allotted, and preference for OSCE were 4.6 ± 0.6, 4.3 ± 0.8, 4.4 ± 0.8 and 4.4 ± 0.8 respectively. The students' feedback suggests that the OSCEs had adequately evaluated the skills expected to be acquired through all the clinical pharmacy courses included in the formative assessment. The students preferred OSCEs over conventional exams, for evaluating their knowledge, skills, and competencies.

Keywords: *Objective structured clinical exams, pharmacy practice, clinical skills, competencies, pharmacy students.*

OR/ST5/0013

TRANSLATION, VALIDATION AND RELIABILITY TESTING OF MALAYALAM VERSION OF DIABETIC FOOT ULCER SCALE-SHORT FORM

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Abstract: Among Diabetes Mellitus (DM) patients, Diabetic Foot Ulcer (DFU) is the most prevalent complication that affects the patients' quality of life (QoL). The present study aims to translate, validate, and test the reliability of the Diabetic Foot Ulcer Scale-Short Form (DFS-SF) in the Malayalam language. The DFS-SF questionnaire was translated into Malayalam language using the Mapi Research Trust translation guidelines. The content validity index (CVI) and reliability were assessed for the translated DFS-SF Malayalam questionnaire. The construct validity was assessed using the EuroQol- 5 Dimension (EQ-5D) and Visual Analogue Scale (VAS). The average CVI score for the DFS-SF Malayalam questionnaire was 1.00. The reliability of the DFS-SF Malayalam version questionnaire has shown an excellent Cronbach's alpha score. There is a positive correlation between dependence and VAS (r=0.538, p=0.014), bothered by ulcer care and VAS (r=0.494, p=0.027). The newly translated DFS-SF Malayalam questionnaire is valid and reliable for assessing the QoL among DFUs in Malayalam patients.

Keywords: *Diabetes mellitus, Diabetic foot ulcer, Quality of life, Validation*

OR/ST5/0014

ASSESSMENT OF MEDICATION ADHERENCE AMONG RURAL PEOPLE LIVING WITH CHRONIC DISEASES- A CROSS-SECTIONAL SURVEY

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Abstract: The World Health Organization (WHO) has raised caution on the problem of long-term treatment non-adherence, which is a significant barrier in treating chronic diseases. Inadequate treatment compliance can result in unmet treatment needs, which can result in insufficient disease control and management and non-adherence to medications is one among the top most public health challenge. The objective of this study is to determine the level of drug compliance and factors associated with non-adherence among rural population with chronic disease. A Cross-Sectional study was carried out for a period of 6 months in a Community Pharmacy of Hunsur taluk of Mysuru District, India. All patients with chronic diseases visiting the community pharmacy were enrolled in the study after obtaining the consent. The level of medication Adherence was assessed using the Medication Adherence Rating Scale (MARS). A total of 270 patients were enrolled in the study, out of which majority of the patients were in the age group on 49-58 years [116 (42.96%)]. Male population was predominant [165 (61.11%)] and [69 (25.55%)] of the population were illiterates. Of 270 enrolled patients 102 patients had two chronic disease 142 (53%) and 102 patients were taking minimum of two medications. Majority of the enrolled patients were found to be non-adherents [162(60%)] to their medications. The reason behind non adherence was financial problems followed by lack of knowledge and family support. This study highlights the need for the educational intervention among the rural population regarding medication adherence and its benefits on their health & quality of life and need for promotion of generic medications as they are economical than compared to branded one.

Key Words: *Medication Adherence, Chronic Disease, Rural Population, Medication Adherence Rating Scale, Educational Intervention.*

OR/ST5/0015

A CROSS-SECTIONAL STUDY ON THE ASSOCIATION OF PRODROMAL SYMPTOMS AMONG MYOCARDIAL INFARCTION PATIENTS

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Abstract: Myocardial infarction (MI) patients experience early warning symptoms, also known as prodromal symptoms before an event of the disease. Hence, to achieve good cardiac health, it is important to create awareness about prodromal symptoms (PS) in the general population. The current study was carried out to identify the most frequent prodromal symptoms & their association with and without risk factors among MI patients. A cross-sectional study was conducted for six months (November 2021 to April 2022) among 196 MI patients with at least one PS during the past 3 months. The patient data collection form was prepared according to the study. The socio-demographic details and other relevant information pertaining to the patients were collected. They were also provided with the McSweeney Acute Prodromal Myocardial Infarction Symptoms Survey and a prehospital health-seeking behaviour questionnaire to assess PS symptoms and health-seeking behaviour among MI patients with and without risk factors. Out of the total patient population, the most frequently observed prodromal symptoms were fatigue, pain throughout the chest, centred high chest pain, sleep disturbance, pain in the left breast and shortness of breath. Among these, fatigue and pain in the neck/throat were found to have a significant association ($p < 0.05$) with the risk factor. All MI patients (with and without risk factors) experienced PS. Prehospital care-seeking behaviour for PS of MI was significantly ($p < 0.05$) high in patients with risk factors than in patients without risk factors.

Keywords: *MAPMISS, Myocardial Infarction, Prodromal Symptoms, Risk Factors.*

OR/ST5/0016

DEVELOPMENT OF BACTERIOLOGICAL PROFILE AND ANTIBIOGRAM TARGETING BACTERIAL SUPERBUGS IN SURGERY DEPARTMENT

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Abstract: Antibiotic resistance among bacteria was becoming a serious problem entire the world. Continuous monitoring of Antibiotic resistance patterns and designing antibiogram are required for an empirical antimicrobial therapy. A prospective study was conducted after ethical approval. Our study evaluates the antibiotic sensitivity pattern in pathogens isolated from SSI. Developing an antibiogram based on susceptibility test. To study the various types of bacterial isolates causing SSIs and their susceptibility pattern. In our study, two swabs were collected in which one swab used to make smear for detection of microorganisms and other for culture and sensitivity test of organisms. Susceptibility test was performed by Kirby- Bauer method. Grades of sensitivity are recognized based on zone of inhibition. A total of 626 patients were observed of which 256 patients were found with SSIs which were more common in females (54.31%) than males. The infection rate was found to be almost 4-times higher in emergency procedures than elective procedures ($P < 0.05$, by using Chi-square test; OR = 0.08). The surgical procedures of 45 min - 1hr duration has led to the development of more SSIs (47.54%). E. coli were more commonly isolated. Most the organisms were highly resistant to Metronidazole, Ceftriaxone and highly sensitive to Gentamicin (75%). Ceftriaxone is ineffective against most organisms but, was commonly used before and after surgery. There is an urgent need to emphasize the rational use of antimicrobials to minimize the misuse of available antimicrobials. In addition, regular antimicrobial susceptibility surveillance is essential for area-wise monitoring of resistance patterns.

Keywords: *SSI (Surgical site infections), Susceptibility test, Kirby-Bauer method, Antibiogram.*

OR/ST5/0017

"IMPACT OF TYPE 2 DIABETES MELLITUS IN THE HIPPOCAMPUS VOLUME AND ITS EFFECT ON DECLARATIVE MEMORY"

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Abstract: In India, economic transitions, high urban migration, life changes in demography, diet, poor physical activity, and genetic susceptibility, make diabetes a potential epidemic threat. Evidence of type 2 diabetes mellitus (T2DM)-associated with hippocampal atrophy was reported by researchers from different parts of the world. India being the hub of diabetes, second to China, a paucity of studies is conducted on T2DM-associated hippocampal atrophy. The present study aims to compare the hippocampal volume of T2DM subjects with non-diabetic healthy controls (HC) and assess declarative memory. A total of 18 T2DM subjects and 18 HC who are apparently healthy matched by age, sex, and education were enrolled in the cross-sectional study. Magnetic Resonance Imaging (MRI) of the 3D high-resolution sagittal structural T1-weighted anatomical sequence was acquired using magnetization-prepared rapid-acquisition gradient echo (T1 MPRAGE SAG) to measure the hippocampal volume. Declarative memory was assessed using the Rey Auditory Verbal Learning Test (RAVLT). No significant differences and correlations were found in hippocampal volume, age, education, body mass index (BMI), blood pressure, RAVLT immediate recall, and RAVLT delayed recall scores between T2DM subjects and the HC group ($P > 0.05$). There was no correlation between T2DM hippocampal volume and RAVLT immediate recall, delayed recall score, BMI, glycated hemoglobin (HbA1c), and duration of T2DM. Our data indicates there is no hippocampal atrophy in T2DM.

Keywords: *Type 2 Diabetes Mellitus, Hippocampus Volume, MRI, Declarative Memory, RAVLT*

OR/ST5/0019

COST-MINIMIZATION ANALYSIS OF ANTIHYPERTENSIVE MEDICATIONS USED IN THE TREATMENT OF HAEMODIALYSIS – A PROSPECTIVE STUDY

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Abstract: End-stage renal diseases (ESRD) and chronic kidney disease (CKD) are widely known renal diseases that affect millions of people in India. Several branded pharmaceuticals and generic medicines are available in the market for ESRD therapy. Several clinicians are unaware of how much money could be saved by using Hypertension (HTN) generic medicines. Thus, the primary goal of this research was to compare the prices of branded versus generic HTN medicines for haemodialysis treatment at the tertiary care hospital. The cost of branded pharmaceuticals was determined using the most recent current index of medical specialities, while the prices of generic medicines were determined using the Jan Aushadhi scheme of India 2022. A standard method was used to estimate the percentage of price variance, specifically for ESRD regimens on replacing available generic drugs, and prices were provided in Indian rupees (as of 2022). All Jan Aushadhi generic medications were less expensive as compared to branded pharmaceuticals. The greatest difference in percentage cost savings were noted with antihypertensive medicines categories. In Calcium-channel blockers (-) amlodipine 5 mg/tab 93.03%, Beta Blockers Carvedilol 6.25 mg/tab, 89.06%, ACE inhibitors Enalapril 86.14%, Angiotensin II antagonists Telmisartan 80 mg/tab, 80%, Alpha Blockers Prazosin HCL 74.52%, Centrally acting agents' clonidine 100 mcg/tab 34.30%. Our research revealed that HTN utilizing generic ESRD medications might result in cost savings. In this study, we observed that calcium-channel blockers (-) amlodipine 5 mg/tab 93.03% highest cost benefit and centrally acting agents' clonidine 100 mcg/tab 34.30% has the least benefit for HD patients.

Keywords: *Analysis of cost minimization, cost reduction, cost to income ratio, end-stage renal disease, ESRD medications, percentage of price variation.*

OR/ST5/0020

IMPACT OF PATIENT COUNSELLING AND MEDICATION ADHERENCE IN POSTPARTUM DEPRESSION PATIENTS

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Abstract: Postpartum depression (PPD) is a complex combination of physical, emotional, and behavioral changes that happens in most of the women after giving child birth. The present study was to compare the effectiveness before and after patient counselling with medication adherence in postpartum depression patients. A prospective comparative study method was used to determine the impact of patient counselling and to evaluate the prevalence of risk factors in PPD patients. Pill count method was used to estimate the adherence of the medication before and after patient counselling. Three sessions of patient counseling were conducted by using Edinburgh postnatal depression and RCOG scale whereas medication adherence was estimated using modified morisky scale. For each session a comparison was done before and after patient counselling to know the medication adherence and its impact which was evaluated based on disease improvement status. From the study it was found that prevalence of PPD rate was 98.66% and the most affected age group is 18 to 24 years. Among the risk factors, abortion is the most prevailing risk factor and married women were mostly affected. During the first session of counselling it was found that the medication adherence was 22% and increased significantly after each follow up counselling and 100% medical adherence was found during the third session. From the study we concluded that patient counseling had a significant impact which helped in improving quality of life in PPD patients and reduces complications such as affected bond between mother and baby, family members and social communication.

Key words: *Postpartum depression, Edinburgh scale, RCOG scale, Modified morisky scale.*

OR/ST5/0021

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE AMONG PEOPLE LIVING WITH HIV/AIDS AT A TERTIARY CARE TEACHING HOSPITAL, GGH, ONGOLE

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Abstract: HIV continues to be a major global public health issue, it effects the individual physically, socially, mentally and financially. The QOL is an important factor in every diseased individual, where as in HIV/AIDS it is related with their health status, functional status, psychological well-being and fulfilment of requirements. The aim of the study is to assess the health-related quality of life among people living with HIV/AIDS. By using WHO-QOL-120 Questionnaire, QOL outcomes at facet level and the factors affecting was assessed. To evaluate viral load before and after the study. To estimate medication adherence based on pill count method. A prospective observational study was carried out among 600 people living with HIV/AIDS, attending ART centre in a tertiary care hospital. Study subjects were interviewed by using questionnaire which has 30 items in 6 domains. Adherence data was collected and statistical analysis was done using IBM SPSS Version 23.0 software. As per our results, we found HIV was more in females. By using ANOVA ONE WAY the mean score and p-value were calculated for each facet, the current study shows that the majority of the patients had good QOL. Gender is cross-tabulated with all demographic factors where we found significance($P<0.05$) according to chi-square analysis, but the mode of HIV transmission is not significant($P>0.05$). We concluded that the medication adherence of participants was good by comparing the viral load values before and after the study. Estimation of QOL in HIV/AIDS is important for the well-being of every individual in all aspects.

Keywords: *QOL (Quality of life), HIV/AIDS, WHO-QOL-120 questionnaire, Viral load.*

OR/ST5/0022

IMPLEMENTATION AND EVALUATION OF STROKE-HUB PROGRAM AND TO ASSESS ITS CLINICAL OUTCOMES IN STROKE PATIENTS AT MULTISPECIALTY HOSPITAL

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Abstract: Stroke is the sudden death of brain cells due to lack of oxygen in the brain. As of managing stroke is a main process, it is rather important to improve the life status of the stroke survivors. To implement a Stroke HUB program and to assess the post stroke status of the patient by improving their clinical outcomes. A prospective observational study was conducted in the department of neurology for 6 months. Post Stroke Status of the patients were assessed using the post stroke checklist. The education was provided to the patient on their disease status and treatment plan. Patients were followed up till the end of our study. Effectiveness of the study was assessed using the health outcomes and improvement in the post stroke status. About 50 patients were included in the study. The post stroke questionnaire was categorized into the problems faced during post stroke and in which 29 patients (58%) was had high impact from intervention, 4 patients (8%) have medium impact and 17 patients (34%) had less impact from the intervention. The patient's knowledge increased subsequently after the assessment of their post stroke status. In a developing country like India, it is important that a specific program like our Stroke HUB program is needed and it is evident from our study that the way of life of the stroke patient can be improved with proper Pharmacist education and care.

KEYWORDS: *Stroke HUB, Post Stroke Care, Stroke checklist.*

OR/ST5/0023

A PROSPECTIVE STUDY ON RISK FACTORS AND COMPLICATIONS OF INGUINAL HERNIA IN A TERTIARY CARE TEACHING HOSPITAL

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Abstract: The abnormal protrusion of viscera or a part of it through a weak point in the abdominal wall is known as inguinal hernia. Inguinal hernia is the most common of abdominal wall hernias. Inguinal hernias comprise 75% of all abdominal wall hernias. The aim of this study was to evaluate the risk factors as well as complications of inguinal hernia. Prevalence rate was estimated. Assessing the recurrence status of inguinal hernia. Estimating the pre operative and post operative complications. To evaluate the comorbidities in hernia. A prospective study was carried out by enrolling patients based on inclusion criteria. The risk factors, complications, surgical history was assessed and statistically analyzed by Descriptive statistics, Chi-square test, One-way ANOVA. As per our study, the prevalence rate was 9%. The main risk factor was heavy weight lifting (75%) followed by smoking. The commonest age group was found to be under 41-60 groups. In our study, bowel obstruction and traumatic hernia were identified as major preoperative complications whereas pain was found as post operative complication. Hypertension was mostly found in patients as comorbid condition. It has shown that there is high recurrence rate of inguinal hernia. As per statistical analysis, there was strong clinical association between period of swelling and complications ($P < 0.05$, using Chi-square test). Regular surveillance is essential for area-wise monitoring of the risk factors and complications in order to decrease the recurrence rate. So, there is a need to create awareness about it in order to improve patient's quality of life.

Keywords: *Inguinal Hernia, Bowel obstruction, Recurrent hernia, Lichtenstein repair.*

OR/ST5/0024

ASSESSMENT OF KNOWLEDGE AND ATTITUDE ON CERVICAL CANCER AMONG FEMALE POPULATION – A CROSS SECTIONAL SURVEY

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Abstract: The most common cancer among women in India remains cervical cancer. Many screening methods are available, yet the majority of Indian women are still not checked for cervical cancer. The rising prevalence may be due to the lack of knowledge on cervical cancer screening and the scarcity of structured screening facilities in the nation. Understanding the history of cervical cancer and the anatomy of the female pelvis helps improve communication and increase awareness of prevention. Thus, the goal of the current study was to evaluate participants' knowledge and attitudes of cervical cancer. A pre-validated questionnaire with 10 knowledge-related and 5 attitude-related questions was used to conduct this cross-sectional survey. The survey received responses from 502 women in total, with an average age of 50.68 years. 206 women had a professional degree, while 369 (73.5%) came from urban areas. Among 502 women 370 (73.7%) of them were aware of cervical cancer; 212 (57.29%) had heard about it from healthcare professionals. 323 (64.3%) women opined that screening can help prevent cervical cancer. A total of 305 women (60.75%) expressed a willingness to get a cervical cancer screening, 354 (70.55%) opined that early screening and detection may cure cervical cancer, and 292 (58.16%) thought that a vaccination could prevent cervical cancer. It was concluded from this study that there is a shortage of accurate information regarding cervical malignancies, screening, and HPV vaccination.

Keywords: *Cervical cancer, HPV vaccine, Screening methods, Knowledge, Attitude*

OR/ST5/0025

PREVALENCE OF OSTEOPOROSIS AND OSTEOPENIA IN POST RENAL TRANSPLANT PATIENTS: A RETROSPECTIVE STUDY

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Abstract: Osteoporosis and osteopenia are one of the major bone diseases that affect kidney transplant recipients. It causes significant long-term morbidity and increases the risk of fractures. This study was conducted to focus on the prevalence of osteoporosis and osteopenia in post renal transplant patients and also to identify the factors contributing to osteoporosis and osteopenia following renal transplantation. A retrospective study among 59 post kidney transplant patients was carried out for a period of 6 months. Patients' demographics and other data was collected using data collection form. Measurement of bone mineral density (BMD) was done using dual-energy X-ray absorptiometry (DEXA). Data was analysed by using SPSS version 22 and statistical significance was determined by using standard chi-square test and paired-t test. Based on the DEXA scan results and BMD, osteopenia was seen in 40.7% and osteoporosis in 32.2% of the studied patients. Osteoporosis was found to be highest in the age group of 21-30 years whereas osteopenia was highest in the age groups of 41-50 and 51-60. Statistically significant ($P<0.05$) associations were found between osteoporosis and low BMI, weight and post-transplant immunosuppressive treatment, whereas no significant relationship was observed with age, gender, smoking, alcohol, diabetes, duration of dialysis and previous history of fracture. Osteoporosis and osteopenia are common among post kidney transplant patients. Low BMI and post-transplant immunosuppressive therapies are the contributing factors. BMD measurement at pre- and post-transplant period is warranted for early recognition and management of this condition.

Key words: *Osteoporosis, Osteopenia, Post Renal Transplant, Immunosuppressive therapies, Bone mineral density*

OR/ST5/0026

A DESCRIPTIVE STUDY ON OUTCOMES OF SOCIODEMOGRAPHIC AND CLINICAL CHARACTERISTICS IN INFLAMMATORY BOWEL DISEASE

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Abstract: The chronic inflammatory Bowel disease is a non-infectious disease, adversely disturbs the second to fourth lifespan with unknown aetiology in various trends globally. The disease burden raised substantially in developing countries over the last few decades causing poor life quality in individuals. The study aims to identify the sociodemographic aspects and clinical characteristics in IBD patients, significantly the conditions have hitherto not been studied in south India. A cross sectional descriptive study collected from 80 patients after approval from human ethical committee between June 2018 to January 2020 at multispeciality hospital. Eighty patients with IBD in male/female ratio of 1:3 in UC & 2:1 CD in the age group of 40 to 50 years with 23.8% in CD and 30 to 40 years in UC of 17.5% with the significance of $p<0.00$. positive family history in UC & CD of 8.8% and 2.5%. Clinically, 32.5% had mild, 56.2% had moderate and 11.3% with severe disease activity. The most common manifestation was abdominal pain (26.1%), diarrhea (18.7%), blood in stools & weight loss (7.5%), anorexia (8.9%), fever (2.5%) and more than 2 symptoms (16.4%). Pharmacological agents used in UC & CD were mesalamine 40%, sulfasalazine 3.8%, steroids 17.5%, azathioprine 12.5% & biologicals 3.6%. The consequences of

sociodemographic and clinical characteristics seem to be complex and multifactorial. This research would promote clinicians and policy makers to develop effective intervention in improving the clinical outcome of IBD.

Keywords: *Inflammatory Bowel Disease, Sociodemographic, Clinical characteristics, Descriptive study, Ulcerative colitis & Crohn's disease*

OR/ST5/0027

AN EXAMINATION OF MENSTRUAL HYGIENE PRACTICES AND KNOWLEDGE AMONG REPRODUCTIVE AGE GROUP WOMEN: A PROSPECTIVE STUDY

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Abstract: Menstruation is a normal biological process and a key sign of reproductive health. Adolescent girls are often hesitant and embarrassed to discuss menstruation and menstrual problems with their parents, friends, and teachers. This may be a reason, which may have turned into a negative impact on their health. Girls who are unaware of menstruation are more likely to have gynecologic issues. The aim of this study is to examine the menstrual hygiene practices and knowledge among reproductive age group women. To estimate cause of menstruation and to associate the type of napkin used and socio demographic details. To determine the knowledge and pattern regarding menstruation. A community based prospective study was conducted by using a self-designed questionnaire. Socio demographic details, Menarche age, type of napkins used were assessed. The details on beliefs, perception and source of information regarding menstruation were collected. The data was analyzed using IBM SPSS 23.0 software. As per our results the menarche age was most commonly seen in 11 to 15 years of age. Cotton cloth were mostly used in rural whereas in urban sanitary napkins were used. Re use of Cotton clothes were observed in 56% of population. Our study showed high usage of meftal spas during the menstrual pain. Urinary tract infections were found at a prevalence of 60%. It is important to increase significant knowledge regarding menstrual hygiene and there is a need to eradicate false beliefs and taboos in the society through health education programmes.

Keywords: *Menstruation, Sanitary napkins, Cotton cloth, UTI (Urinary tract infections).*

OR/ST5/0028

PREVALENCE OF HYPERTENSION, DIABETES MELLITUS AND OBESITY IN HYPOTHYROIDISM: A CROSS SECTIONAL STUDY

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Abstract: Hypothyroidism is the clinical state resulting from decreased production of thyroid hormones. Thyroid hormone levels were fluctuated due to many risk factors, which may be diseases like Hypertension. The present study was to assess the prevalence of hypertension, diabetes mellitus, obesity in hypothyroidism. To associate clinical demographic characteristics and risk factors. Assessing the variations in BMI, BP, Blood sugar levels in hypothyroidism patients. A cross sectional study method was used and patients were included based on eligibility criteria. Data regarding demographic details, lab reports, treatment were collected through data collection form. For every 2 months follow up were conducted, during each follow up the association of hypothyroidism with HTN, T_2 DM, obesity was assessed. Monitoring physical examination and lab values was conducted. From the study it was found that hypothyroidism is higher in 36-50yrs of age where females are more prone. Hypothyroidism with obesity (36%) is highly prevalent when compared to DM, HTN. Based on observational follow up's, TSH levels are higher in baseline and lower in 3rd follow-up. The study reveals that prevalence of hypothyroidism is advancing with age. Following a particular diet has shown a great increase in disease improvement. Calcium channel blockers with levothyroxine are found to be more effective against hypothyroidism with HTN. Obesity has no significant changes in TSH levels when compare with HTN and diabetes. An intimate interaction of thyroid hormones with all components of metabolic syndromes were observed. There is a need to identify adverse health events occurring after long term levothyroxine therapy.

Keywords: *Hypothyroidism, TSH levels, Hypertension, BMI, Diabetes Mellitus.*

OR/ST5/0029

ESTIMATING THE FETAL GROWTH WITH CONSIDERATION OF FOLIC ACID USAGE DURING ALL TRIMESTERS OF PREGNANCY

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Abstract: Gestation is a 40-week stage in which embryo develop into foetus. Those 40 weeks are divided into 3 stages called TRIMESTER. One trimester includes 12 weeks. To estimate the association of foetal growth with the usage of folic acid and various laboratory investigations during all trimesters of Pregnancy. To monitor the effect of Folic acid supplementation in all trimesters of pregnancy with assessment of blood pressure changes. To examine the association between haematological variations and foetal development during different trimesters of pregnancy. To evaluate the thyroid profile and impact RBS levels in pregnant women during all trimesters. A prospective study was used as methodology. Patient's demographic details, medical and medication history, laboratory data has been collected from the patient data collection form. Collected data was assessed for foetal monitoring. As per our results nausea and vomiting symptom was highly observed. Gestational hypertension was mostly observed (54%). Various ages indicate that there is no major risk observed in using folic acid while it is more effective when given in combination with other drugs like methyl dopa+ iron supplements against co morbidities such as HTN, anaemia etc., As per foetal parameters, foetal weight found abnormal in 23% followed by foetal heart rate. Our studies suggest usage of folic acid combinations to regulate co morbidities and to promote healthy development of foetus. It is highly recommended that effective guidelines regarding educating girl child, balanced diet, regular antenatal check-ups, regular intake of Iron & folic acid tablet should be started to get safe motherhood.

Keywords: *Trimesters, Foetal development, Folic acid, Gestational hypertension.*

OR/ST5/0030

CLINICAL PROFILE OF PATIENTS ON STEROIDS AND ITS DRUG RELATED PROBLEMS IN A TERTIARY CARE HOSPITAL

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Abstract: Steroids are anti-inflammatory medication used to treat allergies, asthma, eczema, inflammatory bowel disease and arthritis. The current study was implemented to determine the drug related problems (DRPs) and steroid tapering among the inpatients prescribed with steroids in the department of general medicine using APS-Doc classification system and assess the associated adverse drug reactions (ADRs) using Naranjo Assessment Scale. A prospective study of 6-month duration was conducted among 73 inpatients. Patient data collection form and DRP documentation form was prepared as per the need for the study. The identified DRP, ADR and steroid tapering patterns were documented. The statistical package for the social sciences (SPSS) 20 was used to analyse the data. A total of 62 patients (85%) presented a total of 118 DRPs. Majority of the DRPs were found among patients belonging to the age category of 61-70 (35.5%) years. 14 study subjects (19.2%) were found to have one ADR each. The most common ADR found was Hyperglycaemia (8.2%) and the drugs causing this ADR was found to be Dexamethasone, Prednisolone and Hydrocortisone, followed by weight gain, mouth ulcer and eye discomfort. From the total of 73 patients included in this study, steroid tapering was seen in 13 (17.8%) patients and the most common tapering pattern was observed to be dose and frequency reduction (61.5%). The study concluded on the importance of monitoring of ADRs and DRPs as they are significant and pervasive impediment to effective health care delivery.

Keywords: *Steroid, APS-Doc classification, DRP, ADR, Naranjo Assessment scale*

OR/ST5/0031

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE (HRQOL) IN PATIENTS WITH CHRONIC LIVER DISEASE

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Abstract: Chronic liver disease (CLD) is a long-term condition and in order to enhance the quality of life of the patient it is important to assess all the domains of a patient's health. A prospective study was carried out in 165 patients, to assess HRQOL of CLD and compare the Quality of life (QOL) in different stages of CLD. Data collection form was prepared as per the requirements. The QOL of patients was analysed using the WHOQOL-BREF questionnaire. The child-Pugh and Model for end stage liver disease (MELD) score were calculated using the laboratory values. out of 165 patients 147 (89.09%) were males and 14 (33.3%) patients belonged to 51-60 age category. The mean score of the domains of physical health, psychological, social relationships, and environment were 44.08 ± 18.64 SD, 46.70 ± 19.81 SD, 58.33 ± 19.34 SD, and 54.74 ± 16.74 SD, respectively. As per the Child-Pugh and MELD scoring the quality of life was higher in class A (61.16±17.84) for Child-Pugh class (CPC) and MELD score 6-9 had higher quality of life (65.13±16.85). From the above results, healthcare professionals can identify the relevance of assessing HRQOL of all patients, especially with chronic diseases.

Key words: *CLD, WHOQOL-BREF, QOL, CPC, MELD Score.*

OR/ST5/0032

CHARACTERISTICS AND TREATMENT ANALYSIS OF YOUNG ACUTE CORONARY SYNDROME (ACS) PATIENTS IN A TERTIARY CARE HOSPITAL.

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Abstract: Acute Coronary Syndrome (ACS) is a rare cause of coronary artery disease whose prevalence has been increasing in the younger population of less than 40 years of age worldwide. A clear examination of the changing characteristics and treatment modalities is much more imperative to have a better understanding of the disease sequelae. Thus, the aim of the study was to assess the characteristics and treatment analysis of young patients with ACS in a tertiary care hospital. This is a retrospective study conducted for a period of six months from the medical record department. A total of 198 patients' data were collected. The majority of patients were presented as ST- Elevation Myocardial Infarction (STEMI) (44%). Coronary angiographic findings revealed a higher prevalence of single vessel disease (SVD) with left anterior descending artery (LAD) lesion (48%). Most of the patients had no risk factors (57%) and were treated in a non-surgical manner with statins (88%) and antiplatelet drugs (86%). Based on the clinical presentation and angiographic profile, STEMI was seen in most of the patients and majority of them had SVD with LAD being the most common affected vessel. Emphasis should be given on early diagnosis and management to young ACS patients in order to prevent mortality and morbidity.

Keywords: *Acute coronary syndrome, young age, cardiovascular disease, treatment, risk factors.*

OR/ST5/0034

ASSESSMENT OF SELF-MEDICATION PRACTICE AMONG PHARMACY STUDENTS

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Abstract: Self-medication is the use of medication without a medical consultant for treating minor ailments. The global practice of self-medication influences individual's behaviour and leads to irrational use of drug. The objective of the study was to assess the self-medication practice among pharmacy students. A prospective cross-sectional survey was conducted at a pharmacy college covering diploma and degree students (D. Pharm, B. Pharm & PharmD). An appropriate questionnaire was prepared & validated consisting of 19 multiple choice questions and the same was distributed among students using google form. A total of 712 students responded to the survey, out of which 423(59.41%) were females, 375(52.66%) and 194 (27.24%) were studying in B. Pharm and Pharm. D respectively. The majority of students 624 (88%) were following self-medication for their minor ailments. The most commonly used medicines were analgesic and antipyretic 614 (98.39%). The source of information for self-medication was from textbooks (72.59%) and advertisement (58.81%). This cross-sectional study shows that the number of pharmacy students who practice self-medication is high. At the same time, an increased rate of self-medication practice without proper knowledge is harmful to the health and can sometimes prove to be fatal. Hence, it is important to create awareness and educate the students on the effects of self-medication. Although the self-medication practice is inevitable; there is a great responsibility for drug regulatory authorities and health care professionals in controlling self-medication by creating awareness.

Keywords: *Self-medication, OTC drugs, Drug regulatory authorities.*

OR/ST5/0035

ELDERLY PATIENTS' PERSPECTIVE TOWARDS DEPRESCRIBING OF MEDICINES IN CHRONIC DISEASES: A QUESTIONNAIRE-BASED STUDY

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Abstract: Deprescribing is an individualized structured approach to tapering/stopping of drugs where potential harm outweighs potential benefit. Under chronic co-morbid conditions, the functioning of an elderly patient's body is much more complex than adults and is prone to experience drug-related problems. In India, deprescribing is a very new concept among elderly patients, this study focuses on understanding their perception, and making elderly patients aware which is the first big step towards implementing the deprescribing process. A cross-sectional questionnaire-based study was conducted which included 306 elderly patients who were asked to fill the revised Patients Attitude Towards Deprescribing (rPATD) questionnaire. 93% of patients were willing to deprescribe one or more medications if recommended by their physicians. The burden factor had a score of 3.5 indicating a positive attitude, the appropriateness factor and the concerns about stopping factor had a score of 3.5 and 2.58 respectively depicting a negative attitude, and the involvement factor had a score of 2.98 out of 5 which signified a neutral attitude towards deprescribing. With a rise in the elderly population, implementing the deprescribing process in daily clinical practice will reduce potential adverse events, increase patients' medication adherence and their clinical outcome.

Keywords: *Deprescribing, Elderly patients, Chronic conditions.*

OR/ST5/0036

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PERCEPTION OF GENERIC MEDICINE AMONG GENERAL PUBLIC – A CROSS SECTIONAL STUDY

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Abstract: Generic medicines contain the same active ingredient as that of branded one. Insufficient knowledge regarding the generic medicines among the public have led for non-acceptance. Therefore, this study was conducted to assess the knowledge, attitude and perception regarding generic medicine. A cross-sectional study was conducted among the public of Mysuru visiting selected community pharmacies over a course of four months. A self-administered questionnaire was administered among the public after obtaining the consent. Questionnaire consisted of 13 questions covering knowledge, attitude and perception domains. A total of 550 participants were included in the study of which majority were male [289 (52.5%)], age group between 20-29 years [209 (38%)] were predominant, rural population were more [285 (58.5%)], 189 (34.4%) belonged to professional degree holders. Of the respondents 50.2% had heard about generic medicine. Doctors, the media, pharmacists, nurses, family members, and friends were the main sources of information for the general population regarding generic medications. 41.3% agreed that generic medicine is safe. 49.1% agreed to accept generic medicine if prescribed by the doctor and 30.9% agree that awareness of generic medicine among the general public is very limited. The study clearly demonstrates that only half of the population engaged in the study were aware of generic medications. Educational institutions especially pharmacy colleges, NGOs along with local, state and federal government should create awareness among general public about generic medicines which will enhance the trust among public.

Key words: *Generic medicines, knowledge, attitude, perception, general public.*

OR/ST5/0037

COMPARATIVE STUDY OF PSYCHOLOGICAL IMPACT OF COVID-19 ON HEALTHCARE AND NON-HEALTHCARE WORKER USING WHO-QOL BREF AND PHQ-9 SCALE- NATIONWIDE CROSS-SECTIONAL STUDY

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Abstract: The world population has been greatly affected by the Sars-Cov-2 pandemic and the related financial, civil, psychological and mental health consequences. Considering the significance of QOL, it is imperative to consider the effects of the pandemic for the population. The study was designed to compare the psychological Impact of Covid-19 on healthcare and non- healthcare Workers during Covid-19 pandemic. A cross-sectional survey was conducted among healthcare and non-healthcare workers and a structured questionnaire was circulated in goggle forms via emails and social networking sites. The mean score for four QOL domains was 58.82 ±15.56, 56.45 ±15.52, 59.08 ±19.03 and 51.42 ±15.51, respectively. Among participants, (31.3%) had Minimal Depression, (33.4%) Mild depression, (24.7%) Moderate depression, (8.8%) moderate-severe depression. Healthcare workers were found to be more depressed (34%) at a moderate level of depression and (11%) at severe depression while (11%) of non-Healthcare workers show moderate depression and 12 (5%) show moderately severe depression. The study depicted the detrimental impact of the pandemic on the population, with healthcare workers being more affected by the pandemic and this study calls for use of appropriate psychological intervention to address the mental health needs of the population.

Keywords: *Quality of Life [QOL], Depression, Covid-19.*

OR/ST5/0038

PREVALENCE OF DRUG-RELATED PROBLEMS IN ELDERLY CANCER PATIENTS: A PROSPECTIVE OBSERVATIONAL STUDY IN A CANCER SPECIALTY HOSPITAL

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Abstract: The geriatric population comprises the majority of patients with cancer. They are at high risk for drug-related problems (DRPs) due to multiple comorbidities, polypharmacy, altered pharmacokinetics and pharmacodynamics. This study aimed to determine the rate and pattern of drug-related problems in elderly cancer patients. A prospective observational study was conducted for a period of 4 months where cancer patients of any gender ≥60 years were enrolled and followed daily. All necessary data like patient demographics, past and current medication history were obtained from various data sources including medical records, treatment charts, patient interviews etc. DRPs were identified and assessed. A total of 50 patients were enrolled into the study. Of which, 96 DRPs were identified among 74% of the patients. Commonly observed DRPs were Adverse Drug Reactions (40%) and Drug Interactions (21%). More than half of the patients who developed DRPs (67.6%) had comorbidities, 86% were currently on chemotherapy and majorly (81%) were in the advanced cancer stage. Hence, DRPs are highly prevalent among elderly cancer patients. Adverse drug reactions were the most observed. Risk factors can be age, comorbidities, and stage of cancer. Geriatric cancer patients need careful follow-up to identify DRPs and reduce negative outcomes.

Keywords: *Drug-related problems, geriatric oncology, cancer, polypharmacy*

OR/ST5/0039

A COMPARATIVE STUDY OF COST OF ILLNESS OF ASTHMA AND ITS DRUG INDUCED COMPLICATIONS BY PHARMACOVIGILANCE ASSESSMENT

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Abstract: Asthma is a chronic inflammatory disorder of airways. It affects almost all age population of either sex. Drugs are inevitable for managing asthma. Lack of registries misses Pharmacovigilance activities in chronic diseases. It costs additional to healthcare. Here is an example to highlight the importance of Pharmacovigilance. Evaluate polypharmacy and its untoward effects in managing asthma. To assess Health Related Quality of Life using Pharmacovigilance concepts. And evaluate the relative cost involved in managing asthma and its drug induced complications. It is a prospective interventional pharmaceutical care study. A total of 1381 number of chronic patients were enrolled and subsets of 156 numbers of morbid patients of asthma were identified. The registries of the patients were collected and analyzed. The diagnosis, impairment and risk of asthma are assessed by using spirometer. And drug related complications of asthma are qualitatively and quantitatively assessed by protocol using medical devices. The suspected adverse drug reactions are collected, documented and notified to Pharmacovigilance Programme of India. Test results confirmed that suspected adverse drug reactions are due to prolonged usage of steroids. The cost of Asthma is Rs 14651/-annum and drug induced reactions account for Rs 15000/- per episode. The study concluded that cost of asthma and its drug induced reactions are significantly more or less same. The suspected and rare ADRs is notified to PVPI. And the subject in turn changed to a prescription of NSAIDS.

Key Words: *Medical devices, spirometer, PVPI*

OR/ST5/0040

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS NON-PRESCRIPTION DRUGS AMONG PARAMEDICAL AND NON-PARAMEDICAL STUDENTS OF ACHARYA INSTITUTES

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Abstract: Self- medication is a first option in minor illness particularly among the youths. Since paramedical students have easier access to medications and more understanding about them, this widespread practice is predicted to differ between them and the non-paramedical students. The main objective of the study is to assess knowledge, attitude and practice (KAP) towards non-prescription drugs among paramedical and non-paramedical students of Acharya Institutes. The study conducted was a cross-sectional study. A structured KAP questionnaire consisting of 21 questions was circulated among both the groups. To compare the knowledge, attitude and practice among both the group Mann-Whitney U test is applied. p-value of < 0.05 was considered to be statistically significant. In total 31.7% (95) of anti-biotics are frequently used self-medications. 224 (74%) are aware about when to discontinue the self-medications. The overall attitude towards self-medication was found to be positive with 89.3% total. According to the cross-sectional survey, in paramedical group, despite of having good knowledge there is still an increase in usage of self-medication.

Keywords: *OTC, Self-Medication, Knowledge, Attitude and Practice*

OR/ST5/0041

THE COMPARISION OF SAFETY BETWEEN TWO GENERICS OF PEGASPARAGASE IN PEDIATRIC PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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Abstract: Pegasparagase (Oncaspar®, Enzon Pharmaceuticals) is a pegylated form of L-asparaginase used in ALL treatment. Low-cost generics to PEG are an integral part of cost-effective healthcare strategies for developing countries. The safety of these generics needs to be evaluated in clinical practice. Hence, the objective of this study was to assess and compare the frequency and severity of adverse drug reactions (ADRs) to two generics (Lagipeg®, Cadilla & Hamsyl®, Emcure) of PEG in pediatric patients diagnosed with ALL. Patients were divided into two groups (Lagipeg® and Hamsyl®) and files were scrutinized for ADRs. Correlation of ADRs and variables like ALL cell type, risk category, dose (in ml), and length of hospitalization (in days) of the groups were ascertained. Forty-seven ADRs were identified, where frequency was within the range of 45-50% and comparable in both groups. The length of hospitalization due to ADR was statistically significant in both groups. ALL cell type ($p=0.004$), risk category (p=0.02) in Lagipeg®, and dose ($p=0.004$) in Hamsyl® were statistically associated with ADRs. In both groups, one-fourth of the patients (22%–25%) developed serious ADRs which were acute, i.e., febrile neutropenia (20%–22%). Other ADRs were thrombocytopenia (4.5-8%), thrombosis (4-9%), acute hepatomegaly (8-9%), acute pancreatitis (4.5%), hyperglycaemia (4.5%), acute hypertension (4%), and seizures (4.5-8%). Out of all (47) ADRs, causality assessment showed 25 ADRs to be "possible" and 22 ADRs to be "probable". The two generics were safe and managed with appropriate drug therapy. No fatal ADRs were documented.

Keywords: *Acute lymphoblastic Leukemia, Pegasparagase, Hamsyl, Lagipeg, Adverse drug reactions.*

OR/ST5/0042

PERSPECTIVES ON OUTCOME BASED REFORMS IN PHARMACY EDUCATION UNDER NATIONAL EDUCATIONAL POLICY- 2020

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Abstract: Pharmacy education is currently regulated by the Pharmacy Council of India and the range of courses currently on offer range from the diploma, degree, bridge course, Pharm. D, Pharm. D (Post Baccalaureate), Master's in various specialisations, Ph. D in Pharmaceutical Sciences. National Educational policy 2020 has been evolved to bring out paradigm shift in education and could bring about progressive changes in Pharmacy Profession. Looking at the overall palate of courses offered under the ambit of PCI and the outcome-based education modelling of Pharmacy the implementation of the various recommendation of NEP 2020 becomes the need of the hour. National education Policy provides an opportunity to the learners to assimilate courses from other areas of interest. NEP focuses on the vocational education to enable the learners an ability to be job creators rather than become job seekers. The various co-curricular courses offered under NEP allow the learners to develop their hobbies further. NEP provides for the holistic development enhancing academic, social and interpersonal skills of the learners. One year certificate, two-year diploma, three-year bridge course, four-year graduate degree, five year Pharm D and six-year master degree could lead to rationalisation of pharmacy education with specialisation into clinical and industry-oriented degrees. Graduated certifications will provide an opportunity to the learners to pursue the profession of pharmacy through multiple entry and exit options. Pharmacy Council of India could deliberate upon the possibility of adopting the proposed model of pharmacy education under the canopy of NEP – 2020.

Keywords: *National education policy, Outcome based education, Vocational education*

OR/ST5/0043

SAFETY AND EFFECTIVENESS OF DAILY DOSE OF FLUCONAZOLE AND GRISEOFULVIN IN TREATMENT OFDERMATOPHYTE INFECTION

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Abstract: Despite the extension of their use of fluconazole in dermatophytosis in India comprehensive studies on OTC topical/ oral medication abuse in dermatophytosis is lacking which might lack efficacy and safety. To assess the safety and effectiveness of daily dose of fluconazole and griseofulvin in the treatment of dermatophyte infection. A Prospective, observational, cohort study conducted at Sri Ramachandra Institute of Higher Education and Research (DU) for a period of 6 months. A total of 136 sample size was achieved with clinical diagnosis of dermatophyte infection of skin. Among 136 patients 68 were treated with fluconazole, clinically cure was 39(57.3%), mycologically cured were 22(32.3%), not cured were 7(10.2%) and on visit 3, clinically cured were 24(35.25), improved were 14(20.5%), mycologically cured were 25(36.7%), relapse was 5(7.3%). Remaining 68 were treated with griseofulvin on visit 2, clinically cured were 44 (64.7%), mycologically cured were 23(33.8%), not cured were 1 (1.4%) and on visit 3 clinically cured were 27(39.7), improved were 15(22%), mycologically cured were 26 (38.2%) and no relapse. This study concludes that both fluconazole and both griseofulvin could be used effectively for the treatment of Tinea corporis.

Keywords: *Dermatophytosis, fluconazole, griseofulvin*

OR/ST5/0044

ASSESSMENT AND EVALUATION OF INHALER COUNDELLING TECHNIQUE OF COMMUNITY PHARMACISTS IN MYSORE CITY

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Abstract: Medications used for the management of pulmonary diseases are delivered via inhalation devices. Proper technique in using these devices is required for effective medication delivery. Community Pharmacist have a vital role in educating patients on correct inhaler technique and to ensure that the patients know how to make the best use of their inhaled medication. In order to deliver proper counselling, it is essential that community pharmacist should have proper understand and skill for the use of inhaler. This study aims to assess and evaluate the community pharmacist knowledge and skill regarding the proper inhaler technique. This cross-sectional survey-based study was conducted among community pharmacist in Mysore city for a period of six months. All the relevant and necessary data was collected from pharmacist interview after obtaining their consent for study participation. A validated questionnaire consisting of 10 questions was used to collect the information on knowledge, attitude and practice of community pharmacist on proper inhaler counselling techniques. The skill of inhaler use was evaluated against the checklist of steps essential for using inhaler. A total of 88 community pharmacist participated in the study. A majority (77.28%) of them were males. Around (81.82%) of the community pharmacist were qualified with diploma in pharmacy. A majority (68.18%) of the respondents agreed that they educate the patient on appropriate use of inhaler and (17.04%) reported that they often educate patients while (10.22%) educate occasionally and (1.13%) never educate the patients on appropriate use of inhalers. Evaluation of skill through checklist projected an unsatisfactory result as only 10 % of the pharmacist performed

all the steps correctly. In this study most of the community pharmacist's lack the proper knowledge and skill regarding the inhaler techniques and many of the pharmacist had communication problems also. There for an awareness program and training among community pharmacists may help to upgrade the knowledge and skill.

Key words: *Inhaler counselling techniques, pulmonary diseases, educational intervention, Knowledge, Attitude, Practice.*

OR/ST5/0046

A STUDY OF MEDICATION RECONCILIATION PRACTICES IN TWO MULTISPECIALITY HOSPITALS

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Abstract:
Medication errors are more frequent at discharg e, but the crucial point to identify and address them is during their hospital stay. Medication reconciliation is considered as the principal approach to solve this. The study aimed to conduct medication reconciliation in admitted patients during admission and discharge in two multispeciality hospitals and classify the identified medication discrepancies according to their potential to harm. This prospective interventional study was carried out in medicine and surgery departments of Hospital 1 and Hospital 2 located in urban areas of a South Indian city. within a six-month period. A medication reconciliation form was prepared. In patients who satisfied the criteria, medication reconciliation was conducted and interventions were performed. The identified discrepancies were then given to an expert panel for classifying them based on their potential to harm. 580 medication discrepancies were identified from a total of 372 patients, Drug interaction (n=345, 61.6%) was the most commonly observed discrepancy, followed by omission error (n=127, 12.9%). Among the drug interactions identified, 193 (55.94%) were major, 142 (41.15%) were moderate and 10 (2.89%) were minor interactions. The drugs that were observed to be commonly omitted were anti hypertensives and anti diabetic drugs followed by IHD, Thyroid, Dyslipidemic, Parkinson's and CVA drugs. The medication discrepancies observed from both the Hospitals at admission and discharge were found to be statistically not significant (p=0.246). Among 30 commonly occurring discrepancies, panellists rated their clinical significance as significant (22, 73%), serious (3, 10%), and not significant (5, 16%). Our research presented proof of drug therapy

discontinuity and discrepancy at periods of patient transfers within the hospital. Clinical pharmacists can prevent discrepancies by conducting medication reconciliation. The results urge the hospital authorities to implement medication reconciliation practices to improve patient safety. To accomplish this, professional development of clinical pharmacists is of great importance.

Keywords: *medication reconciliation, clinical pharmacist, medication discrepancies, medication errors.*

OR/ST5/0047

PEDIATRIC SEPSIS: CLINICAL OUTCOMES AND PREDICTORS OF MORTALITY FROM A SECONDARY REFERRAL HEALTHCARE SETTING OF SOUTH INDIA

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Abstract: Sepsis in children is a significant cause of morbidity and mortality worldwide. Patient's outcome in a PICU of a developing country is affected not only by clinical diagnosis at admission but also by demographic characteristics of the population, available infrastructure, and admission policies of PICU. The study assesses the predictors of mortality and to correlate the mortality predictors and clinical outcomes in terms of survivor and non-survivor. Risk of Mortality (PRISM III) scoring is a steadfast prognostic marker for mortality prediction in the pediatric cohort admitted to PICU. The six months mixed study which involves both prospective and retrospective data collection included demographics, detailed history of clinical data, laboratory parameters, and PRISM III score was calculated. The final outcome was recorded in terms of survivor and non-survivor at the time of discharge. In a total of 69 pediatric patients, 65.21% of infants were diagnosed with sepsis. PRISM III score of 24 variables was applied to assess the outcome and quality function of pediatric ICU; in which 12 patients were having score > 30, in whom only 2 (16.17%) survived and 10 (83.33%) were dead. In conclusion, PRISM III takes 24 hours to complete and cannot be used in adapting PICU admissions. They are largely used to assess the relation between severity of illness & length of stay or cost.

Keywords: *Clinical outcome, mortality, pediatric intensive care unit, PRISM III, scoring system, scoring system.*

OR/ST5/0048

DRUG UTILIZATION STUDY IN EMERGENCY DEPARTMENT IN A TERTIARY CARE HOSPITAL

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Abstract: Drug Utilization Evaluation (DUE) studies are designed to evaluate the appropriateness of drug usage on an on-going prescription. The objective of this study was to evaluate the management of patients presenting to the emergency department and the direct cost of therapy in the emergency medicine department of a tertiary care hospital in Hyderabad. A cross–sectional study was for a period of 6 months. All the necessary data was collected prospectively. The numbers of patients presented to Emergency Department were 200. All the patients were above 18 years of age. Out of 200 patients 75 were female and 125 were male. The maximum duration of stay for a patient was 4 hours then the patients were shifted to other respective departments. Cost minimizing analysis was done most of the cost burden was seen on patients presenting with cardiovascular disease. Rationality of prescription was checked by using World Health Organization (WHO) prescribing indicators. From our current study, Proton Pump Inhibitors (PPI), Antiemetic and Antibiotic use, injection prescribing, and the number of drugs prescribed per encounter showed considerable deviation from the standards recommended by the World Health Organization. Most of the drug cost was driven by the prescription of Proton Pump Inhibitors, Antiemetic, and broad–spectrum Antibiotics.

Key words: *Emergency department, evaluate, Antibiotics,* Proton Pump Inhibitors, *Antiemetic, Rationality.*

OR/ST5/0049

A COMPARATIVE STUDY OF KETOROLAC, PARACETAMOL AND TRAMADOL FOR POST-OPERATIVE PAIN MANAGEMENT IN GENERAL AND ORTHOPAEDIC SURGERIES

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Abstract: Pain is an unpleasant bodily sensation usually evoked by an external or internal noxious stimulus. The amount of pain a patient goes through after a surgery is related to the site of surgery and extent of tissue damage. Proper post-operative pain control leads to shortening of the length of hospital stay, helps in earlier patient mobilization and increased ability to perform daily living activities. To compare Ketorolac, Paracetamol and Tramadol in terms of their efficacy, safety and postoperative analgesic effect in patients undergoing orthopaedic and general surgeries. A prospective, randomized, comparative, observational study carried out on 120 patients of age 12-75 years undergoing orthopaedic and general surgeries. The patients were divided into 3 groups 1, 2, 3, and were given ketorolac, paracetamol and tramadol respectively. Duration of post-operative analgesia, pain score, pain onset time, median time to rescue analgesic, pain free interval, hemodynamic parameters and incidence of adverse effects were recorded and statistically analysed using chi-square test. Reduction in pain score, pain free interval and average of median time to rescue analgesic was highest in the ketorolac group. Ketorolac when given postoperatively is a more effective analgesic when compared with paracetamol and tramadol as it gives a longer duration of analgesia which decreases the use of rescue analgesic.

Keywords: *Post-operative pain, analgesia, orthopedic surgery, hemodynamic parameters.*

OR/ST5/0051

EVALUATION OF CARDIOVASCULAR COMPLICATIONS IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Abstract: Cardiovascular disease (CVD) is the main cause of death in the chronic kidney disease (CKD) patients. A better understanding of cardiovascular risk factors is main key to develop strategies to reduce cardiovascular morbidity and mortality among CKD patients. To evaluate the severity of cardiovascular risk using Framingham Risk Score in patients with chronic kidney disease. To analyze various clinical findings occurring in Cardio-renal syndrome. To identify and compare the co-morbidities in chronic kidney disease patients with secondary cardiovascular complications. To compare and relate various cardiac and renal biochemical parameters. The study is a prospective observational study conducted in CKD patients having secondary cardiovascular complications, for duration of 6 months with a sample size of 150. The Chi square test method was used to test between group differences among the categorical variables. All the statistical analyses were done at 5% significance level or 95% Confidence interval. The prevalence of heart failure was found to be the highest, followed by CAD and ACS. Our multifactorial study concludes that, the incidence and prevalence of existing and pre-existing cardio-renal complications suggest a significant risk for developing cardiovascular diseases in CKD patients.

Keywords: *Chronic Kidney Disease, Cardiovascular disease, Hypertension, Diabetes Mellitus, Dyslipidemia, Cardiac Biomarkers, Heart failure, Cardio-renal syndrome.*

OR/ST5/0052

EVALUATION OF ANTI-PLATELET DRUGS IN ISCHEMIC STROKE AND TRANSIENT ISCHEMIC ATTACK PATIENTS

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Abstract: The study aims to evaluate the effective use of anti-platelet drugs in ischemic and transient ischemic attack patients. To determine the aptness, safe and effective use, frequency of adverse drug reactions, and cost-effectiveness of different branded drugs prescribed in anti-platelet drugs in ischemic and transient ischemic attack patients. This is a prospective observational study done in Aster Prime Hospital for six months in the neurology department. Study of 100 patients' data were collected and analysed. The study showed the most common age group of patients was 61-70 years. The incidence for the males was 65% and for females was 35%. The most common drug prescribed was Aspirin. The majority of patients were diagnosed with Acute ischemic stroke. The adverse reaction was seen in maximum patients taking dual anti-platelet drug therapy. Tab Ecosprin is the most cost-effective drug among all the anti-platelet drugs prescribed. It concludes the evaluation of anti-platelet drugs for safety, efficacy, and cost-effectiveness in ischemic stroke and transient ischemic attack patients. Anti-platelet drugs prescribed for stroke patients were appropriate and followed guidelines 2021. Aspirin - Ecosprin has shown fewer adverse effects, more efficacy in treatment, and the highest percentage of cost-saving in stroke patients compared to all other mono and dual anti-platelet drug therapy.

Key Words: *Anti-platelet drugs, Ischemic stroke, Transient ischemic attack, Aspirin, cost-effectiveness.*

OR/ST5/0053

DEVELOPMENT OF RESEARCH INNOVATION ECOSYSTEM IN PHARMACY EDUCATION: STRATEGIES FOR A BETTER FUTURE

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Abstract: In this rapid growing world of globalisation the pharmacy education in India is still striving hard to reach the international standards. There is an urgent need of basic, advanced, up-skilling and re-skilling strategies in order to develop research-innovation eco-system (RIES) in pharmacy education. Interaction within every sector of pharmacy can create wonders in improving the education and quality of life. RIES surrounds the patient's health with different sectors. Among these academia plays a pivotal role. Academia needs to exercise revamping of curriculum keeping in pace with current and emerging trends in the field of pharmacy. Outcome bared education which emphasizes overall development of students with the support of all stakeholders. Teaching should be research led/research oriented/research tutored/ research centred so that students have out of box thinking/learning and become innovators. RIES driven entrepreneurships and start-ups are the penultimate goal of this strategy. Ultimately, pharma education may take the lead role in MoE initiatives at national and international platforms. SWOC analysis is very important for any HEI to develop to next level. Idea labs, R&D lab, Pre incubators, Incubation centres, Patent cell, Entrepreneurship cell, Start-up unit, Collaborative research and innovation system, Memorandum of Understanding with facilitators like industry/ research labs, and access to accelerators and mentors would be an ideal set of elements to develop a research innovation ecosystem in any pharmacy institution. In conclusion, having Up-to-date awareness about central government and state government schemes pertaining to research, and innovation and market requirements would strengthen the sophistication of this eco system.

Key Words: *Pharma academia, Facilitators, Accelerators, Research, Innovation*

OR/ST5/0055

TEACHING PRACTICES INVENTORY: A TOOL FOR CHARACTERIZATION OF TEACHING EFFECTIVENESS

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Abstract: The research has shown that the effectiveness of teaching practices in science, technology, engineering, and mathematics, is enhanced through the practices like collaborative learning, inclusion of critical thinking, and use of ICT tools. There has been increased need of implementing these practices in and after the pandemic. During the COVID-19 pandemic, we have taken feedback of more than 1400 teachers from all over the India who joined us for the online faculty development program on effective use of ICT tools in teaching. This feedback was aimed to analyze the use of various teaching practices undertaken by the pharmacy teachers. We used the teaching practices inventory (TPI) prepared and evaluated by the Wieman and Gilbert, 2014 with some modifications. This inventory of teaching practices provided a detailed picture of teaching practices. The analysis was carried out using scoring rubric that gave a quantitative measure of the extent of use of teaching practices. It was found that the use of ICT and research-based teaching practices were minimal. Most of the teachers were using old methods of teaching. During the faculty development program, more than 90% of the teachers were introduced first time to the ICT and research-based teaching practices. It can be concluded from TPI scores that the teachers need to use various teaching practices to increase the student's performance. The teaching practices inventory is a tool in the hands of teachers to update regularly about effective use of teaching practices.

Keywords: *ICT tools, Teaching practices Inventory, Pedagogy, research-based teaching practices*

OR/ST5/0057

GAP ANALYSIS OF PHARMACY CURRICULUM GUIDING ENTREPRENUERSHIP-A QUALITATIVE STUDY AMONG PHARMACY PROFESSIONALS

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Abstract: The Pharmacy science is vast industry driven course necessary to be regularized with practical, oriented curriculum guiding innovation, entrepreneurship and market. The course structure is received from the university and framing course objectives followed by IQAC Approval. According to Financial times, Covid has taken big leap for profiles for pharmacy entrepreneurs but only 40% are working as pharma professionals in industries. The discrepancy is due to lack of knowledge or unable to suit to the market/ industry expectations. Thus, the research study was devised to understand the gap in curriculum which should be modified to suit to pharma industry standards and market fit. The gaps identified are reported to BOS committee of OU University (QS World Rank 1001-1200) in letter format. Initiation and identification analysis of GAP in form of standard survey was furnished to local pharmacy students and the faculty of OU affiliated pharmacy institutions by St. Pauls College of pharmacy in 2022. Impact analysis depicts need of industrial visits and the R & D activities to fulfil the pharmacy curriculum helping students to grab good positions with attractive salaries. Practical training for beyond syllabus topics is crucial to set to industry and market. Study results reveal that 64% raised positive opinion to inculcate industry oriented practical training, out of box thinking to suit the market. Nurturing Pharma graduates with market fit strategy will contribute start-up, entrepreneurship and industry set ups in India leveraging nations GDP and is a good market competitor. Thus, it facilitates to address emergency public health issues, pharmacy stores with generic production and entrepreneurs.

Key words: Pharmacy Curriculum, Course objectives, GAP, Entrepreneurship, Market fit

OR/ST5/0058

COMPARISON OF DAPAGLIFLOZIN WITH CIDMUS IN HEART FAILURE PATIENTS

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Abstract: To compare the safety and effectiveness of dapagliflozin with cidmus in heart failure patients. To observe the prosperity, sufficiency and adequacy of dapagliflozin in contrast to cidmus. To observe improvement of ejection fraction and quality of life after administration of dapagliflozin. This is a prospective, observational based study done in aster prime hospital for 6 months in cardiology department. A minimum of 115 cases of heart failure patients were collected. This data was noted in the data collection sheet. Data includes the age, gender, diagnosis, and lab reports which include HbA1c levels, ejection-fraction, pro-BNP, and KCCQ-12 score. In our study, diverse statistical and analytical methods were calculated using SAS version 9.4 which includes mean, standard-deviation, chi-square test, and dependent-T-test. Our study showed that people aged 50-59(35.38%) & 60-69(32.30%) are more affected with co-morbidities. Whereas safety and efficacy of dapagliflozin compared with cidmus was similar($P<0.00001$) and 2-D echo parameters had been improved in similar after both the treatments. Cidmus was about twice more in price than dapagliflozin (using cost-effective analysis). Quality-of-life is similar in both who were used to treat heart-failure with dapagliflozin and cidmus. The study reveals that after therapy with dapagliflozin and cidmus in patients with heart-failure, dapagliflozin was found to show better safety, efficacy, quality-of-life, a fair bit of downsizing in hospitalization, mortality, and is also better in an economical aspect when compared with cidmus.

KEYWORDS: *heart failure, dapagliflozin, anti-diabetic, cidmus, ejection fraction.*

OR/ST5/0059

IMPACT OF IMPLEMENTATION OF OUTCOME BASED EDUCATION USING PROBLEM BASED LEARNING AND BLENDED LEARNING TOOLS IN CLINICAL PHARMACY EDUCATION

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Abstract: Most of the educational institutions have started adopting Outcome Based Education (OBE) as it has become an essential aspect for Accreditation Processes. This Paradigm shift requires adoption of novel teaching learning processes such as Problem Based Learning (PBL), Blended Learning (BL), Flipped Classes etc. The Objective of this study is to understand the implications of using PBL and BL Tools over a self-developed and Validated course module on Clinical Pharmacy Education over conventional Learning strategies. A quasi-experimental study was carried out among Pharmacy Students with same pre-requisites but different streams. The Participants were exposed to 14 hours of Study Materials delivered across various mediums spread over 2 weeks by the same Instructor. The Control group (Doctor of Pharmacy III Year) received lectures through conventional methods like Chalk &Talk, Power point Lectures whereas the Trial group (Bachelor of Pharmacy III Year) received Blended classroom model (70-20-10 strategy) coupled with Problem Based Case studies. Their Performances were evaluated using Various Assessment rubrics developed to evaluate their understanding on the module. The rubrics included assessment tests, Objective Structured Clinical Examination (OSCE) and a questionnaire about their understanding was developed. While evaluating Statistically there was no major significant differences in the assignment however trial group students have performed better in OSCE session (p=0.0047*). The Trial group students have a better understanding on the clinical aspects despite from non-clinical background. This study suggests that adoption of Novel tools from an early Phase of the academic career will improve the core competencies of the students.

Keywords: *Outcome Based Education, Teaching Learning Process, Problem Based Learning.*

OR/ST5/0060

EVALUATION OF FIXED DOSE COMBINATION DRUGS AND ITS RATIONAL USE IN A TERTIARY CARE HOSPITAL

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Abstract: The aim of the study was to collect and evaluate FDC data from various disciplines to determine the rational use of fixed-dose group in a tertiary care hospital. Description of patient of drug use in a specific population. Establishment of a decision on problem-solving. Six months of prospective interventional research was conducted in a tertiary care hospital, appropriate data was collected and results were obtained. 300 case sheets were collected for evaluation which contained 330 Fixed-Dose Combinations overall. Among all departments, FDCs were prescribed as the highest percentage in the Surgery department. Pipercillin+Tazobactum were the most commonly prescribed FDC in General Wards and Surgery department. Obstetrics & Gynaecology and ENT departments had the minimum percentage of prescriptions overall. It was observed the highest percentage of irrational FDC was the combination of Diclofenac Paracetamol, showing adverse drug reaction of the main hepatotoxicity. It was observed that the hospital physicians prescribed antibiotics more rationally with very few new drugs. But it was also seen that there were irrational combinations like Monteleukast+Levocetrizine, and very harmful combinations like Diclofenac +Paracetamol and also a few Vitamin combinations were used.

Keywords: *Fixed-dose combinations, rational drug use, drug utilization evaluation.*

OR/ST5/0061

IMPACT OF USE OF MODERN PEDAGOGY IN TEACHING PHARMACY STUDENTS

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Abstract: Education plays a vital role in contribution to economic growth of a country as it develops the skilled workforce, apart from intellectual and cultural awakening. However, decades together traditional classroom teaching is being implemented where the students are not actively involved in teaching learning process. Thus, the students are unable to do what they are supposed to do. In this era of technology where the innovative and modern pedagogy tools are available, the focus on active learning methods and self-learning practices should be enhanced so that expected outcome in the students is achieved. The aim of this study was to transform teaching learning process through utilization of best teaching practices and modern, innovative pedagogical techniques. The survey of faculty and students was conducted to analyse present scenario of teaching learning process. MOOC course of eight weeks was designed and conducted for training the faculty in modern pedagogical techniques. The impact of MOOC on faculty and students was studied. It was found that around 70% of 2608 teachers trained became proficient in using effective teaching practices, modern pedagogy, LMS, creating effective presentations & videos, online teaching & assessment after successful completion of MOOC. The impact of use of modern pedagogy by teachers was studied in students and it was found that the outcomes of student learning improved exponentially thereby improving results. It can be concluded that teaching learning process can be enhanced by implementing modern pedagogical techniques and further student learning outcomes can be improved.

Keywords: *Modern pedagogy, learning outcomes, teaching learning process, online teaching, active learning.*

OR/ST5/0062

EVALUATION OF PATIENTS REQUIRING INTENSIVE CARE USING APACHE-II SCORING SYSTEM TO ASSESS THE INCIDENCE AND SEVERITY ADVERSE DRUG REACTIONS

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Abstract: Complex pharmacotherapy and polypharmacy increases the risk of ADRs in ICU patients. ADRs are harmful and occur with an alarming frequency in critically ill patients. The objective of this study was to evaluate patients in ICU using "APACHE-II severity score" and identify the incidence and severity of ADRs. The types of ADRs were classified using extended "Rawlins and Thompson" classification and Organ system was classified using MedDRA. The causality and severity assessment were performed using "WHO-UMC causality scale" and "Hartwig and Siegel scale". A total of 208 patients included in the study were categorised into ADR and no-ADR group. Incidence of ADRs were divide into 2; ADRA (10.6%) and ADRH (11.6%). The variables like number of co-morbidities ($P<0.01$), number of drugs consumed ($P < 0.001$), mean APACHE II score ($P<0.001$) and hospital stay (in days) ($p<0.01$) was statistically significant with ADRs. Anti-hypertensive (31.5%) class was highly implicated of ADRs and the prevalent ADR was electrolyte imbalance (31.2%) and thrombocytopenia (16.6%). Other ADRs were hyperglycaemia (13.8%), prolonged prothrombin time (5.5%), QT prolongation (8.3%), coagulopathy (2.7%), and renal toxicity (2.7%). ADRs were moderately severe (88.9%) and causality assessment showed 1 "certain", 11 "possible", and 35 "probable". The severity of patient's disease was strongly associated with severity of ADRs. Well-trained pharmacists involved in patient care activities are a valuable asset in the early detection and prevention of ADRs, as well as ensuring quality drug use and providing better patient care.

Keywords: *Adverse drug reaction, Apache II scale, Intensive care unit, Hartwig and Siegel scale, WHO-UMC causality scale*

OR/ST5/0063

EFFECT OF ANTI HYPERTENSIVES ON COGNITION IN DEMENTIA

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Abstract: The aim of this presentation is to discuss the role of anti-hypertensives on cognitive decline and dementia and discuss the mechanisms underlying this. Cognitive impairment and dementia are associated with aging and chronic hypertension. Hypertension is the most important vascular risk factor related to cerebrovascular pathology. Hypertension predisposes to early cognitive impairment, which may evolve to dementia or stroke over time. Anti-hypertensives show potential benefits to cognitive function by lowering blood pressure and by showing specific neuroprotective effects. An ongoing prospective observational study is being conducted and the study will be carried out for the duration of 6 months in the department of Neurology in a tertiary care hospital. Four randomized controlled trials showed preventive effect of anti-hypertensives on incidence of cognitive decline and dementia. SYST-EUR (Systolic Hypertension in Europe Study) I and II showed 55% reduction in risk of dementia. HOPE (Heart Outcomes Prevention Evaluation) showed 41% reduction in cognitive function decline associated with stroke. PROGRESS (Perindopril Protection against Recurrent Stroke Study) showed 19% reduction in cognitive function decline. Three main classes of Anti-hypertensives have been associated with prevention of cognitive impairment and dementia along with blood pressure reduction. These include, Calcium Channel Blockers, Angiotensin Converting Enzyme inhibitors and Angiotensin AT-1 Receptor Blockers.

Keywords: *Anti-hypertensives drugs, Hypertension, Cognitive function, Cognitive impairment, Dementia, Alzheimer's Disease (AD).*

OR/ST5/0064

ANTIMICROBIAL THERAPY – RESPIRATORY TRACT INFECTIONS

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Abstract: To study the patients with respiratory tract infections and assess the antimicrobial therapy. The primary objective is to study and assess the antimicrobial therapy in respiratory tract infections, to understand, interpret and improve the prescribing, administration, usage of most common medications and to reduce the adverse drug reactions associated with medications. A prospective observational study was carried out in Aster Prime Hospital for duration of 6 months. 135 patients having respiratory tract infections in hospital were taken into consideration. Their history, antimicrobial therapy, lab monitoring parameters were routinely checked. Follow up was done until the patient's discharge. Out of 135 patients, 53% males (N=71) and 47% females (64) are diagnosed with respiratory tract infections. Patients were prescribed empirical antibiotic therapy before lab investigations and descalation and escalation was done in 13 patients and 71 patients respectively. Most commonly used antimicrobial agent include Cefoperazone, Amoxicillin, Piperacillin, Cefpodoxime, Clarithromycin, Azithromycin. Among 135 patients who were prescribed with antibiotics, 11 patients showed resistance which accounts of about 8% and adverse effects accounted about 5% (N=7) In many cases antibiotics are not effective due to drug resistance or delay in identifying the type of bacteria causing infection. Therefore, there is a need for a proper antibiotic therapy that can be used at all stages of infection against all bacteria causing respiratory tract infections.

Keywords: *Respiratory tract infections, antimicrobial therapy, empirical, descalation, escalations.*

OR/ST5/0065

DEVELOPMENT AND EVALUATION OF THE DRUG INFORMATION LEAFLET (METFORMIN)

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Abstract: Drug Information Leaflet (DILs) improves patient knowledge is the most effective approach in diabetes pharmaceutical care, however less practiced in Indian settings. This study aimed at development, validation, and readability testing of DIL of Metformin and further conducted user testing of developed DIL in patients taking Metformin. The DIL on Metformin was developed after reviewing and referring online resources and model booklets, evaluated by expert team for content and design. The Baker Able Leaflet Design (BALD) evaluated the DIL design's layout and features. Flesch readability ease (FRE) and Flesch Kincaid grade level (FK-GL) was used to assess the readability of DILs; then pre- and post-questionnaires introduced for user testing. ICC was used to check internal consistency of developed questionnaire. The surveys were distributed to metformin-using patients by either through Google form or by physical format. User opinions on the DIL layout, information, and legibility were gathered. The readability ratings of FRE 59.8 and FK-GL 7.6 indicate that the reader should be between the ages of 11 and 12. The English and Marathi versions received BALD scores of 25 and 23, respectively. For English and Marathi, the ICC of the user testing questionnaire was 0.89 and 0.96, respectively. For Metformin, the overall knowledge-based mean score improved from 67.8 to 90.9%. The disparities in knowledge were statistically significant ($p=0.05$). Above 62% of patients were satisfied with metformin DIL content and legibility. The standards like good quality, easy readability, and design required for patient education for a better understanding about metformin was met, thereby significantly improving knowledge of patients.

Key words: *Diabetes, Anti-diabetic medications, DILs, Readability, User opinion.*

OR/ST5/0066

A CROSS SECTIONAL WEB-BASED PILOT SURVEY ON KNOWLEDGE, ATTITUDE AND ACCEPTANCE OF COVID-19 VACCINE AMONG INDIAN PUBLIC: PHARMACOVIGILANCE VIEW

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Abstract: Coronavirus disease 2019 (COVID-19), the highly contagious infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), had resulted in more than 2.9 million deaths worldwide. Vaccine hesitancy, described by WHO Strategic Advisory Group of Experts (SAGE) as a “delay in acceptance or refusal of vaccination despite availability of vaccination services”. Currently, data on COVID-19 vaccine acceptance is limited which is essential for effective strategy implementation. The study evaluated the acceptance of COVID-19 vaccine and identifying side-effects/ADRs among public and create awareness to overcome from their concerns. All the data were collected by sharing self-administered questionnaire. Out of 309 participants, 288 has taken first dose vaccine and 21(18.05%) were second dose. From total response 81(28.12%) of people reported side effects after receiving first dose and typical side effects were pain at injection site (82.71%), allergies (0.74%), fever (87.65%), headache (64.19%), body pain (80.24%). Half of the people have not taken any medication for side effect management. Study concluded that exposure of short-term side effects was common and which is a barrier in acceptance of second dose vaccination among 1/3rd of population. To overcome the hesitancy, we created awareness through e- pamphlets on the importance of completion of vaccine schedule. Since it’s a pilot study, extensive research is needed to rule out the long-term consequences of vaccination and present results may help the public to gain a greater understanding of the real-world experience with COVID-19 vaccination.

Keywords: *Pharmacovigilance, side effects, COVID-19, VACCINE.*

OR/ST5/0067

A PHARMACOVIGILANCE STUDY AND DRUGSAFETY ANALYSIS IN A SOUTH INDIAN TERTIARY CARE TEACHING HOSPITAL

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Abstract: ADR (adverse drug reactions) monitoring and reporting systems started evolving in various countries, mainly in the wake of the Thalidomide tragedy, during the 1960s. The present study aims to analyze the pattern and occurrence of the extent of ADRs in a tertiary care teaching hospital. A prospective observational spontaneous reporting study, extending over a period of 3 years and 6 months was conducted in a tertiary care hospital. A total of 982 ADRs were identified among that 462 (47.5%) were male and 560(52.95%) were female. 78.15% of ADRs were reported from the inpatient department and the remaining 21.85% were from the outpatient department. 261(26.57%) patients with suspected ADRs were found between the age group of 51-60. Suspected ADRs were observed commonly in general medicine 326 (33.19%). 161(16.4%) patients were admitted for the treatment of ADRs, and 102 (10.39%) patients' hospitalization period was increased. Systems most commonly affected were skin 19.96%. Type A accounted for 535 (54.48%) ADRs while 215(25.32%) ADRs were of Type B. Gastric irritation 89(9.06%) was the most commonly reported ADR. Causality assessment revealed that 5% (n=47) were definite, 31% (n=308) were probable, 63% (n=619) were possible and only 0.8% were unlikely. The outcome of ADR management revealed that 84.73% (n=832) of the reactions were managed by withdrawing the offending. The total amount of Rs.1,82,453 was spent for 224 patients. Thorough knowledge of ADRs and a well-established ADRs reporting system will help to reduce the occurrence and the costs of avoidable ADRs-related admissions.

Keywords: *Adverse drug reactions, spontaneous reporting, Economic burden*

OR/ST5/0068

DRUG UTILIZATION AND EVALUATION OF ERYTHROPOIETIN STIMULATING AGENTS IN HAEMODIALYSIS PATIENTS IN A TERTIARY CARE HOSPITAL

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Abstract: Anemia in CKD patients is caused by a decrease in the kidneys' synthesis of erythropoietin hormone. FDA has approved erythropoietin stimulating agents for the treatment of anemia. The main aim is to study drug utilization and evaluation of erythropoietin stimulating agents in hemodialysis patients. To study hemodialysis patients with various comorbidities for effective drug utilization, evaluate possible drug interactions, adverse reactions, therapeutic outcomes of erythropoietin stimulating agents and antihypertensives in hemodialysis patients. It was a prospective, observational study in the department of nephrology carried out on 110 patients for 6 months at Hyderabad's Aster Prime Hospital. Statistical analysis was reported using descriptive statistics, paired t-tests, and ANOVA. We evaluated the effectiveness of erythropoietin stimulating agents by measuring lab parameters like hemoglobin, hematocrit, iron and RBC over a period of 3 months and our results showed a significant increase in levels of the same. In our study by using ANOVA, we found out that the lab parameters such as hemoglobin, hematocrit, iron, and RBC levels increased significantly over the period of time by the use of ESA. Based on the above findings, we can conclude that erythropoietin stimulating agents help improve anemia in CKD patients undergoing hemodialysis.

Keywords: *Chronic kidney disease (CKD), haemodialysis, erythropoietin stimulating agents, anaemia, blood pressure, antihypertensive, haemoglobin, iron, haematocrit*

OR/ST5/0070

PREDOMINANCE OF THERAPEUTIC INCOMPLIANCE AND MORTALITY IN VENTILATOR ASSOCIATED PNEUMONIA- A PROSPECTIVE APPROACH

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Abstract: Ventilator associated pneumonia is one of the most common nosocomial infections in healthcare centres due to the lack of a definite therapeutic approach that accelerates complicated events to worsen. The current study cites several such events, including assessing antibiotic culture sensitivity patterns, comparing mortality rates, and determining the appropriateness of initial empirical antibiotic therapy in the cohort population. Data were collected from intensive care unit in-patients over the age of 18 who had been diagnosed with the infection. Endotracheal aspirate was cultured and the VITEK-2 tool was used to detect bacterial isolates, their antibiotic sensitivity patterns and to differentiate the population into multidrug resistant and non-multidrug resistant. The mortality rate and the initial therapy advised were compared using the APACHE II score and the sensitivity report, respectively. Qualitative data was analysed using SPSS and the Chi-square test with a level of significance at $p < 0.05$. The incidence of gram-negative bacteria was higher in causing VAP. Klebsiella pneumoniae (37.6%) was found to be resistant (68.57%) to penicillin, (68.57%) carbapenem, and (68.57%) fluoroquinolones and sensitive (34.28%) to glycylcycline among the other bacterial isolates present at the study site. A higher incidence of mortality rate and inadequate empirical therapy was seen in multidrug resistant (55.8%) ($p = 0.001$) and (79.2%) ($p = 0.001$) populations, respectively. Ventilator associated pneumonia is the reason for multidrug resistance and mortality in the suffering population because of inadequate initial antibiotic approach.

Keywords: *ventilator associated pneumonia; intensive care unit; antibiotic sensitivity pattern; multidrug resistant; mortality*

OR/ST5/0071

IMPACT OF CLINICAL PHARMACIST IN ASSESSMENT OF DEPRESSION LEVELS IN PATIENTS WITH VITILIGO VULGARIS.

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Abstract: Vitiligo is an acquired autoimmune illness of the skin and mucous membrane characterized by well-defined, depigmented macules and lesions caused by the selective loss of melanocytes. The main objective of the study was to determine the impact of clinical pharmacist intervention on depression level in vitiligo patients. A prospective study was carried out in Dept. of Dermatology at a tertiary care hospital. Vitiligo patients aged ≥ 18 years were included in the study. The QIDS-SR16 (Quick inventory depression symptomology-self rating scale) was used to determine depression level. Using Quick Inventory Depressive Scale-Self Rating 16 (QIDS-SR16), patients with vitiligo were screened for depression level which concluded that 32.26% (20 patients) were seen to have mild depression, 6.45% (4 patients) with moderate depression, and 61.29% (38 patients) had no depression. The comparison of the depression scale, at initial visit and after follow up was done at an duration of 3 months using the dependent t test statistics. The mean of QIDS-SR16 at the baseline time period was 6.42± 3.64 and after follow-up the mean was estimated to be 4.26± 2.16. 36.84% patients had no depression at the baseline evaluation and 63.16% at post follow-up evaluation, 57.89% patients had mild depression which decreased to 36.84% and 5.26% patients had moderate depression which was reduced to 0.00%. This study indicates that there was a significant drop in the depression level after through counselling was provided by a clinical pharmacist.

Keywords: *Vitiligo, Depression, Stigmatization, Clinical Pharmacist.*

OR/ST5/0072

NEED OF PROTOTYPE CURRICULUM AND ACADEMIC REGULATIONS FOR PHARMACY PROGRAMME IN INDIA: SWOC ANALYSIS OF CURRENT CURRICULUM AND CHANGES PROPOSED.

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Abstract: Pharmacy Education in India is regulated by Pharmacy Council of India by different regulations framed time to time. Among the registrable qualifications with Pharmacy Council, Bachelor of Pharmacy course is the most important. The regulation framed by PCI, the B. Pharmacy Course Regulations, 2014 has many salient features to its credit. This SWOC analysis is to enlighten the different aspects of the syllabus and course regulations, for students, teachers, examining authorities and to PCI. As the curriculum is amended uniform across the country, the outcome is expected to be uniform in terms of Knowledge, Skill and Attitude qualities in the students passing out from different Institutes. In mapping the objectives of the curriculum with the outcomes, there are some lacunae observed and some overlying of subjects along with repetitions of the topics. From the view point of NEP 2020, the credit based academic progression and liberty to choose the courses and such modifications may be considered. There are some important changes proposed in the curriculum based on the feedback collected from teachers who are involved in teaching particular subjects and compiled for making the prototype curriculum for the industry ready Pharmacists. Apart from the Industry, need of Pharmacy graduates in Pharmacy Practice is also taken into consideration and the updates needed to be included in the curriculum. The backbone of Pharmacy education, B. Pharmacy course, curriculum is analyzed and possible changes are suggested in the present study and reported.

Keywords: *Pharmacy Education, B. Pharmacy, PCI, NEP-2020, Pharmacy Practice, Industrial Pharmacy*

OR/ST5/0076

DOES VARIATION IN THE UTILISATION OF DRUGS USED IN THE MANAGEMENT OF ACUTE ISCHEMIC STROKE EXIST? WHAT IS THE CORRELATION BETWEEN ADHERENCE TO EVIDENCE-BASED GUIDELINES AND ASSOCIATED CLINICAL OUTCOMES?

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Abstract: Despite evidence-based guidelines for AIS have been developed, their implementation does have gaps, and disparities. Studies have shown suboptimal adherence as a risk factor resulting in worsening of clinical outcomes in the management of AIS. The primary-objective was to evaluate the utilisation pattern of the drugs used in the management of AIS. The secondary-objective was to determine adherence to evidence-based guidelines and their association to clinical outcomes. A prospective, observational, and descriptive analysis was performed for the period of one year (August 2021 to July 2022) in adult patients admitted with a primary diagnosis of AIS. The patients who have received all or none admission and discharge performance-indicators as per the guidelines given by ISA and ASA were adopted for drug utilisation assessment. Of the 70 patients, 55 (78.6%) were male. During hospitalization, LLAs (100%), EATs (100%), and antiHTN (54%) were most commonly prescribed, followed by antiepileptics (38%), DVTp (27%), and IV-rtPA (25.8%). On discharge, LLAs (100%), antithrombotics (100%), and antiHTN (55%) were most commonly prescribed, followed by smoking cessation intervention (47%), antidiabetics (28%), and anticoagulants for AF (8%). The optimal adherence to performance-indicators was 62% to 78%. In-hospital death or DAMA (26%; 95% CI 25–27.1), MACEs (15%; 95% CI 13.8–16.1), were primary-outcomes in the non-adherent group. Non-adherence to treatment-protocol prolonged the LOH [10 vs. 6 days; p = 0.002). At discharge, the proportion of the patients returning to their functional baseline (evaluated using BI) was significantly different in adherent and non-adherent patient groups (68% vs. 32%; p = 0.006).

Keywords: *Acute ischemic stroke, evidence-based guidelines, clinical utilisation, adherence, clinical outcomes*

OR/ST5/0079

PRESCRIPTION AND PHARMACOECONOMIC ANALYSIS OF CARDIOVASCULAR DRUGS IN A TERTIARY CARE HOSPITAL

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Abstract: Pharmacotherapy is important in reducing morbidity and mortality related to cardiovascular diseases. Drug therapy problems (DTPs) are major concerns of healthcare and have been identified to contribute to negative clinical outcomes by impacting a patient's quality of life, prolonging hospital stays, and increasing the overall burden of healthcare expenditures. Therefore, this study aimed to assess drug therapy problems among patients with cardiovascular diseases who were hospitalized and received follow-up at a tertiary care hospital. To assess the patient's quality of life in prescription and pharmacoeconomic analysis of cardiovascular drugs in a tertiary care hospital. The objective of the study denotes the drug therapy problems in cardiovascular patients, analyze the prescription pattern and pharmacoeconomic analysis, and improve the patient's quality of life. An institution-based prospective interventional study design was conducted among 295 eligible patients with cardiovascular diseases. The blood pressure, co-morbidities, and prescribed drugs were noted and analysed. The majority of cardiovascular patients were associated with comorbidities 220 (75%) and of the total comorbidities, Hypertension 145 (39%) was found to be most commonly associated. Anti-hypertensive drugs (267) notably beta-blockers were prescribed the most. The most common types of DTPs were patient non-compliance, ADR, polypharmacy, and medication error. Patient non-compliance was noted to be 174 (58.98%). A total of 15 ADRs were noted and ADR of Ticagrelor-induced dyspnoea was majorly reported. Among 7 reported medication errors, prescription errors were the most common. Polypharmacy was reported in a majority of the patients 230. Detection and prevention of DTPs along with identifying patients at risk can save lives, help to adopt efficient strategies to closely monitor patients at risk, enhance patients' quality of life and optimize healthcare costs.

Keywords: *Quality of life, Drug Therapy Problems, Medication error, Polypharmacy, Adverse Drug reactions.*

OR/ST5/0083

ASSESSMENT OF QUALITY OF LIFE IN TYPE II DIABETIC PATIENTS BY THE MODIFIED DIABETES QUALITY OF LIFE (MDQOL)-17 IN SECONDARY HEALTH CARE: A RANDOMIZED CONTROLLED STUDY

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Abstract: Worldwide, diabetes Mellitus (DM) is a life-threatening disease that, potentially increases one's risk of developing microvascular and macrovascular complications and if it remains uncontrolled can lead to mortality, cost of treatment and adversely affects the quality of life (QoL). A major outcome indicator for managing chronic diseases is the quality-of-life assessment. The objective of our study was to assess the quality of life in Type II diabetes mellitus patients in secondary health care using the modified diabetes quality of life (MDQoL)-17. A randomized controlled study was conducted over 3 years, after ethical committee approval. As per the inclusion criteria, 300 patients were selected and randomized into Control (150) and Interventional Group (150). Demographic details were documented and the patients were administered with the MDQoL questionnaire. The data was analyzed using IBM SPSS version 22. Majority of patients were male (72.6) and most fall in the age group ranges 31-40 years. Majority of the subjects 102 (31.33%) have diabetes duration of 1-5 years and 108 (36%) were overweight. Majority of the diabetic patients had the QoL score between 70 and 50. Patients without comorbidities and complication had a better QoL. There was a statistically significant link between a variety of characteristics, including age, the length of one's diabetes history, the quantity and type of complications, and the quality of life of diabetic patients (p 0.05). In the control group, the overall QoL of diabetic individuals is lower. To maintain a better QoL in diabetic patients, effective education and maintenance of rigorous glycaemic control are therefore required.

Keywords: *Quality of Life, Diabetes Mellitus, Diabetes complications, Randomized controlled study, glycaemic control.*

OR/ST5/0084

ASSESSMENT OF SAFETY AND EFFICACY OF GENERIC VERSUS BRANDED METFORMIN

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Abstract: Type II Diabetes Mellitus is usually treated with oral hypoglycaemics, Metformin being the most common. It may be prescribed as monotherapy or in combination with other hypoglycaemic drugs namely Glimepiride, Voglibose and Vildagliptin. Since diabetes is often a lifelong disease, coft effectiveness of the medication is necessary and patients try to achieve this through generic medication. Generic drugs are supposed to have the same composition as that of existing brand drug. This study is being conducted to check if the safety and efficacy of both branded and generic Metformin are the same. Currently 10 patients using generic, and 10 using branded have been enrolled and are being followed up in a comparative study. Data regarding adverse effects, laboratory parameters: Random Blood Sugar, Glycosylated Haemoglobin is being collected at regular intervals. ECHO (Economic, Clinical, Humanistic Outcome) model is being followed to collect the same. Current data shows both generic and branded medicines have similar side effects, but also their own set of problems. Most of the generic problems stem from the lack of trust in "cheaper" medicines. Upon comparing lab data collected till date there is a minute difference in the averages of branded and generic parameters; branded medicine showing better clinical endpoint (decrease in the elevated blood sugar over 3 follow ups). However, the completion of study will allow us to understand if the efficacy and safety of generic and branded is truly the same, which will help us educate patients accordingly.

Keywords: *Diabetes Mellitus, Metformin, Generic Medicine, Branded Medicine*

OR/ST5/0086

RETROSPECTIVE STUDY OF PREVALENCE RATE OF RISK EXPOSURE IN CHRONIC KIDNEY DISEASE (CKD) PATIENTS.

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Abstract: The kidney is a primary regulator of sodium and water balance, as well as of acid–base homeostasis. Impairment of kidney function is often referred to as CKD (chronic kidney disease). Identify populations for more systematic screening for CKD and provide methods for screening and diagnosis. Outline treatment options for patients with CKD to decrease progression of disease. Highlight common co-morbid conditions such as cardiovascular disease and diabetes, emphasizing the importance of aggressive disease management. The present Observational Retrospective study was carried out at Department of Urology and Nephrology of Vivekanand hospital Latur from Jan 2022 to July 2022. Study population was 100. The study includes patients with age >18 years & who is willing to give written informed consent for study. The study suggesting that 29% Hypertension, 35 % DM (Diabetes Mellitus), 20% both DM& HTN, Drug induced 6 %, Unknown 10% these comorbidities in total population. Stage 4 & 5 CKD patients were higher in number from total papulation 30 & 47 respectively. The study concludes that high prevalence 35% of CKD among diabetic patients. The rate in higher among hypertensive patients 29% and with both comorbidities DM with HTN is 20%. Intensive screening for diabetic and hypertensive patients is recommended for early detection of CKD.

Keywords: *CKD (chronic kidney disease), Hypertension, DM (Diabetes Mellitus), ESRD (End stage renal disease)*

OR/ST5/0089

AN OBSERVATIONAL STUDY ON MEDICATION ERRORS IN A TERTIARY HEALTH CARE HOSPITAL

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Abstract: Medication errors can be any preventable event that may occur during entire medication processing. It can cause or lead to inappropriate medication use, prolonged hospitalization, and patient harm. It is estimated that about 1% of total global health expenditure is estimated as a global burden due to medication errors. Most MEs are under-reported and it results in serious consequences on patient quality of life. It is therefore important to understand the importance of ME reporting to ensure optimal patient care. The present prospective observational study mainly aims at the evaluation and categorization of medication errors in the inpatient department of cardiology at a tertiary care hospital, Erode, Tamil Nadu. A separate medication error reporting form was designed for the purpose. A total of 504 patient data were collected and 298 (59.12%) medication errors were identified. The majority of them were administration errors (42.95%) followed by prescribing (22.81%). More than half of the MEs were under Category A (57.71%) and category B (32.88%) respectively. Factors associated with health care providers (38%), patients (44%), work environment, and medicines were the major influencing elements in the occurrence of medication errors. The study results indicated half of the medication errors were associated with high-risk drugs like anticoagulants, and anti-thrombotic, since these Medication errors occurred by rectifiable mistakes, the study highlights the need for an efficient health care team for taking necessary interventions to prevent medication errors incidence for better patient care.

Keywords: *Medication errors, Medication use, Interventions*

OR/ST5/090

Assessment of Prescription pattern in a tertiary care teaching hospital and its compliance with standards

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Abstract: Prescription errors can cause an increase in cost, duration of treatment, adverse drug reactions, and drug interactions. A prescription audit is a quality improvement tool used for ensuring the rational use of drugs and it is mainly based on documented evidence of a diagnosis, treatment, and instructions to achieve the same. To assess the prescription pattern and its compliance with standards. A prospective study based on WHO indicators was conducted for three months period in a tertiary care teaching hospital. A total of 556 patients in regular medications and 100 patients in As and when needed medications were included in the study. An excel sheet and google form was made using the standard indicators and statistical analysis was done using statistical software. The doctor's documentation and nurse's documentation for regular medications and stat medications were observed and the results were tabulated. The results showed that the doctor's compliance with regular medications there is a scope for improvement, the prescribing pattern that showed the least compliance was in writing end signature (4%) and end date (5%). The prescribing pattern that showed the least compliance was writing signature (79%). Quality and patient safety issues are important in hospitals as it effects both clinical outcomes and patient satisfaction. An effective prescription audit helps healthcare professionals, administrators, patients, and the public to ensure that patients are receiving the best care.

Keywords: *Prescription errors, patient care, doctors, nurses, compliance, audits.*

OR/ST6/001

DEVELOPMENT AND VALIDATION OF STABILITY INDICATING ASSAY DEVELOPMENT FOR ENZALUTAMIDE IN STANDARD AND DOSAGE FORM BY RP-HPLC METHOD

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Abstract: A simple, rapid, accurate and economic stability indicating method has been developed for estimation of Enzalutamide from bulk and pharmaceutical formulation. In RP-HPLC method, chromatographic separation was achieved on Phenomenax, C18 (150mm×4.6mm×5 m) column using Acetonitrile: Water (65:35 v/v) as the mobile phase with detection at 236 nm. The drug was subjected to acidic, alkali, oxidative, thermal and photolytic stress conditions whereas Capsule was subjected to thermal and photolytic stress conditions. The drug follows linearity in the concentration range 10-50 µg/mL with correlation coefficient value 0.9995. The proposed method was applied to pharmaceutical formulation and % amount of drug estimated 101.09% was found In good agreement with the label claim. The accuracy of the method was checked by recovery experiment performed at three different levels i.e., 80%, 100% and 120%. The % recovery was found to be in the range 99.45-100.4%. The low values of %R.S.D. are indicative of the accuracy and reproducibility of the method. The precision of the method was studied as an intra-day, inter-day variations and repeatability. The %R.S.D. value less than 2 indicates that the method is precise. Ruggedness of the proposed method was studied with the help of two analysts. The above method was a rapid and cost- effective quality-control tool for routine analysis of Enzalutamide in bulk and in pharmaceutical dosage form.

Keywords: *Enzalutamide, Validation, Stability indicating, RP-HPLC, Quantitative determination, Methanol.*

OR/ST6/002

2^3 Factorial Design for Optimization of HPLC-PDA Method for the Simultaneous Estimation of Efonidipine Hydrochloride Ethanolate and Telmisartan in Tablet Dosage Form

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Abstract: A simple, novel, rapid, precise and accurate high-performance liquid chromatographic (HPLC) method was developed for simultaneous quantification of Efonidipine Hydrochloride Ethanolate (EFE) and Telmisartan (TLM) using 2^3 Factorial Design by evaluating the effect of three independent variables i.e. pH, flow rate and mobile phase composition. Retention time, area, resolution, number of theoretical plates and tailing factor were selected as response factor. The effective separation was achieved using C_{18} column Inertsil ODS (150 * 4.6mm, 5µm), HPLC system with PDA detector with 0.05M KH_2PO_4 Buffer (pH 3.5): Acetonitrile (60:40 % v/v) mobile phase & 1.0 ml/min flow rate and detected at 254 nm. The perfect sharp peak observed at Retention time of TLM and EFE were 2.720 and 4.430 min respectively. It was showed linear calibration curve in the quantity range 20-60 µg/ml and 10-30 µg/ml. The % RSD showed for TLM and EFE of repeatability 0.674 and 0.899, intraday of 0.254-0.713 and 0.390-0.623, interday of 0.608-1.393 and 0.861-1.120, respectively. The LOD values were 2.245 and 1.35 µg/ml for TLM and EFE, respectively. The LOQ values were 6.804 and 4.093 µg/ml respectively for TLM and EFE. % Assay of drugs was 99.361% and 102.341% for TLM & EFE. The method was found to be precise, accurate and specific during the study. Hence, the projected technique could be employed for routine quality control of these drugs in combined tablet formulation.

Keywords: *Telmisartan and Efonidipine HCl Ethanolate, RP-HPLC-PDA System, 2^3 Factorial Design approach, Validation.*

OR/ST6/003

TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHY AND ITS REGULATIONS

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Abstract: Bovine Spongiform Encephalopathy (BSE) has a place with the uncommon group of continuously degenerative neurological infections known as transmissible spongiform encephalopathies (TSEs). TSE sicknesses are described by long incubation periods ranging from a while for transmissible mink encephalopathy, to several years for BSE. TSE consistence testaments are a sort of CEP (Certificate of Suitability). They are utilized to expand wellbeing while working with materials that might actually be sullied with TSE. During the 1980s, when the principal TSE pandemic happened, researchers started centering a greater amount of their time and work to figure out these circumstances. By 1996, a connection between the human type of mad cow illness, Creutzfeldt-Jakob infection, and BSE from ingestion of meat was found. With the connection between BSE and Creutzfeldt-Jakob being found, researchers affirmed that level transmission of TSEs from animals to people can happen. This is of extraordinary concern while working with specific animal-derived reagents in the lab since there is right now no fix or treatment for TSEs. Research recommends that TSEs are brought about by a strange variant of a protein called a prion (prion is short for proteinaceous irresistible molecule). It is vital to recollect, in any case, that numerous materials utilized in labs are engineered or gotten from creature tissues that don't represent a gamble of getting a prion illness so not all items will be TSE ensured.

Keywords: Bovine Spongiform Encephalopathy, Transmissible spongiform encephalopathy, Prion, degenerative neurological infection.

OR/ST6/004

INDUSTRIAL DESIGN REGISTRATION REGULATIONS IN INDIA AND EUROPE

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Abstract: Creative innovations have been a constant in development and improvement of any economy. This paper explains about the Intellectual property rights Industrial design Registration guidelines in India and Europe country. Industrial design intellectual property refers to colour or line compositions that provide a handcraft or product a three-dimensional appearance. In a legal sense, this is the artistic or decorative portion of an article. A layout is the shape, organisation, pattern, ornamentation, or composition of strains or colours carried out to any object, whether or not it's far two-dimensional, three-dimensional, or both. This may be achieved the usage of any business method or technique (manual, mechanical, or chemical) on my own or in combination, so long as the remaining end result appeals to and is evaluated best on the premise of sight. Any manner or principle of construction, as well as everything that is just mechanical, is not included in design. It also excludes any trademarks or artistic creations. A design is something this is carried out to an article in place of the real item. The product on which the design can be put should be something so as to be added to the customer as finished goods. Within the notion of design, buildings and structures are not items. However, portable constructions or models that are marketed as completed goods may be subject to design registration.

Keywords: Industrial design, Intellectual property rights, Design, Design registration

OR/ST6/005

Regulatory Strategies for Orphan Drug Development and Approval on a Global Scale

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Abstract: Medicines and vaccines for uncommon diseases (such as Huntington's and myoclonus, and Tourette syndrome) are referred to as "orphan drugs" since they are only available in very small quantities. The incidence, severity, and availability of alternative treatment options for rare illnesses differs from jurisdiction to jurisdiction, making it difficult to categorise them. According to the laws and regulations in existence, the frequency of a rare illness might vary greatly from region to region and nation to country." The Orphan Drug Act (ODA) has been adopted in a number of countries throughout the globe more than 35 years after it was originally established (such as the United States; Australia; the European Union; Japan; and so on). There are more drugs being developed to treat these illnesses than there are people being diagnosed with them. Because they have such a small part of the market, pharmaceutical companies aren't interested in creating orphan drugs. This is the present state, despite the multiple incentives provided by the orphan drug statute. Findings show a stronger focus on current laws as well as concepts of rare illness and medications as well as integrated methods in nations like the United States (EU), Canada (AUS), and Australia.

Keywords: *Rare diseases, Orphan drugs, Orphan Drug Act, Legislation*

OR/ST6/006

Regulatory Aspects Concerning Generic Drugs Approval In "BRICS" Countries

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Abstract: The BRICS (Brazil, Russia, India, China, and South Africa) is an alliance of five large developing markets: Brazil, Russia, India, China, and South Africa. In order to preserve the health and well-being of the general public, the pharmaceutical regulated businesses must abide by all applicable laws and regulations as enforced by the regulatory authorities. Regulatory restrictions differ from one country to the next depending on the country in question. As a result, it is challenging for pharmaceutical firms to create a single medicine and get simultaneous market clearance in many nations. One of the key issues faced by the regulatory body is ensuring that goods are created in accordance with the regulatory requirements of the nation in which they are being sold. In order to comply with ANVISA requirements, BE studies must be conducted solely against Brazilian innovators and at ANVISA-approved centers in a timely manner. In contrast, BE experiments may be conducted against any innovator in both fast and fed circumstances in Russia, which is a striking divergence. It is possible that modifications will occur in the dossier submission manner in the future. For example, Russia has begun to adopt EU processes in 2020, while South Africa has begun to follow eCTD in the filing of dossiers in 2017. The purpose of this review is to examine and evaluate the regulatory requirements that differ among these five nations, as well as to draw attention to the changes in dossier submission that have made it possible to submit several dossiers at the same time.

Keywords: *BRICS, CDSCO, ANVISA, NMPA, SAHPRA, Generic Drugs.*

OR/ST6/007

Regulatory considerations of paediatric medical devices – a comparison study of U.S and EU

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Abstract: There are significant differences in physiology, growth, and the type of diseases occurring in children and adults, these differences demand the development of medical devices (MDs) specifically intended for the paediatric population. It's more challenging to build devices for children since they are generally very active, and they grow faster than adults, and also there are far fewer children who need medical devices than there are adults, which discourages device manufacturers. Clinical modifications must be made to products by developers to address children's smaller bodies, growth, and prolonged use. There are a number of promising initiatives, including the Paediatric Device Consortia Program, Early Feasibility Studies, and the new System of Hospitals for Innovation in Paediatrics – Medical Devices. In 2007, the Food and Drug Administration (FDA) created the Paediatric Device Consortia (PDC) Grants Program under the administration of the Office of Orphan Products Development. In 2018, the FDA awarded over the US $30 million to five new PDCs. In the EU Paediatric medical device development is overseen by regulations that require the submission of a Paediatric investigational plan (PIP) after clinical trials are complete. The information to support the safety and efficacy of the paediatric MD is then reviewed by the Paediatric Committee (PDCO). This paper highlights a brief overview of the regulation of paediatric medical devices in the USA and EU and respectively compares the approval pathways in both regions.

Keywords: *Paediatric medical devices, Paediatric Device Consortia, FDA, PIP*

OR/ST6/008

PHARMACEUTICAL EXCIPIENTS: GLOBAL REGULATORY CHALLENGES

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Abstract: Excipients are ingredients that are purposefully added to a medicine for reasons other than the therapeutic or diagnostic effect at the prescribed dosage. Excipients have a variety of roles in pharmaceutical dosage forms, including determining the appropriate form of consistency, regulating the solubility and bioavailability of active compounds, boosting the stability of active chemicals in completed dosage form, and many more. Excipients are controlled as active medicinal ingredients in the majority of developed nations. It is assumed throughout Europe that novel excipients must be examined as new chemical entities. The Food and Drug Administration in the United States evaluates and approves the use of excipients as part of a new drug application. Excipients in pharmaceuticals play an important role in medication formulation. The assessment of the safety of pharmaceutical excipients is a key concern in several nations. In 1991, the Worldwide Pharmaceutical Excipients Council (IPEC) was formed in response to a lack of standardised international regulatory requirements. The IPEC was discovered to calibrate with various countries such as Japan, Europe, and China to address prevalent industry concerns regarding international harmonisation of excipients standards, the introduction of useful new excipients to the market, and the development of excipient safety evaluation guidelines. The present review tried to analyze worldwide challenges controlling pharmaceutical excipient regulations.

Keywords: *Excipients, Issues, Market, Industry.*

OR/ST6/0010

Orphan Drug Pricing and Cost Trends in USA: An analysis of impact of Orphan Drug Act

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Abstract: In 1983, Orphan Drug Act was enacted in USA to support research and development of orphan drugs by providing incentives and grants. This study analyses the impact Orphan Drug Act on Orphan Drug revenue strategies of pharmaceutical and biotechnology companies in USA. The analysis was performed on Orphan Drug designations and approvals obtained from Orphan Drug and Orange Book Database of Food and Drug Administration. Patient population and revenue information were taken from IQVIA reports and drug portfolio of top pharmaceutical companies. The compiled and analysed data gave a view of orphan drug development and pricing. There are 389 orphan drugs in circulation in 2019 with average price of $32,000: prices ranging between $6,000 till more than $500,000. 39% of the drugs cost more than $100,000 but treats only 23% patients. Out of 1.8 million treated patients in 2019, 0.1% of patients received treatment with drugs costing more than $500,000. Spending on orphan drugs by companies was 11% of total expenditure in 2019. The high cost of orphan drugs remains an issue as overall 10% of impacted patient population receiving treatment. It is observed that there is increase in investment and orphan drug approval because of the incentives and grants. But cost remains high, and availability of treatment is not as expected due to the high costs. Initiatives should be taken to address the cost factor without impacting the quality of research, so that the treatments become affordable, and the marketing of these drugs remain economically beneficial to drug manufacturers.

Keywords: *Orphan Drug Act, Orphan Drug Designation, Grants and Incentives, Economics of Drug development*

OR/ST6/0012

Current Trends in Regulatory Actions against Misbranding and Adulteration

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Abstract: Every nation in the world suffers from misbranded or adulterated medications, which can have fatal consequences, cause manufacturers and consumers to lose money, and erode public confidence in the healthcare system. More stringent regulation and legal action against the issue are urgently needed to reduce the amount of contaminated, misbranded, or inferior quality pharmaceuticals. A serious issue is the adulteration and replacement of crude drugs. When a desired basic medicine is unavailable or is causing undesired side effects, it can be beneficial to substitute another drug with a comparable pharmacological effect but less undesirable side effects. But in the majority of circumstances, it is inappropriate since turning an original drug into a substandard drug may result in a range of negative side effects, from mild to severe life-threatening reactions. Therefore, knowledge of all forms of adulteration and substitution is essential to stopping this unlawful practice and ensuring the safety of customers. However, India has taken certain preventative measures to combat the subpar regulatory organization of medications for safeguarding and advancing public health.

Keywords: *Regulation, adulteration, public health*

OR/ST6/0013

Comprehensive Study of Cosmetic RegulationEnforcement in India with Brazil, Sri Lanka, Singapore and Gcc Countries

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Abstract: The main objective of any regulatory compliance is to deliver a great product that is both safe and effective for human use. Cosmetic legislations, which also include same concepts of quality, safety, and efficacy, as well as certain fundamental regulatory standards such as nomenclature and advertising, are used to govern cosmetic on the market. Cosmetics and personal care items in Brazil are categorized as Grade I or Grade II, depending on the level of Risk. Perfumes, cosmetics, toiletries, and other similar items must be registered with ANVISA, the National Agency for Health Surveillance, which oversees their manufacture, import, and commerce. In India Cosmetics including dyes, colours, and pigments other than those Prescribed by the BIS and Schedule Q all are illegal under Rule 134 of the Drugs and Cosmetics Rules. Rule 145 of the Drugs and Cosmetics Rules prohibits the use of lead and arsenic in cosmetic goods for colouring purposes. Per Rule135 it is prohibited to import products coloured with lead or arsenic. Cosmetics including substances are restricted from being produced or imported by rules 145 D and 135 A, respectively. Cosmetic goods are protected by many regulatory bodies/authorities across the world, each with their own set of laws and regulations. These authorities set tight rules for cosmetic manufacturing, importation, packaging, labelling, and other trade elements. The BIS for Singapore Health goods (ASEAN Cosmetic Directive) rules 2007 under the HEALTH PRODUCT ACT are examined. Likewise different requirements for cosmetic registration in various countries are discussed here in this study.

Keywords: *Cosmetics regulation, ANVISA, GCC, CDSCO.*

OR/ST6/0014

Regulatory perspectives of Quasi drugs in Japan: Transition of regulations and quasi-drug raw material standards

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Abstract: In 1960, the Pharmaceutical Affairs Law was passed, centralising the regulation of both cosmetics and "quasi-drugs." Quasi-drugs have a history of being treated as products that are out of the drug sales regulations under the old Pharmaceutical Affairs Law of 1948. As a background, the diversification of the ingredients used, and the increasing use of highly functional ingredients have made it necessary to deal with the risk of side effects. Quasi-drug ingredients and products are subjected to premarket approval and must require manufacturing and marketing licence. Manufacturers and other responsible parties are responsible for ensuring that products they are selling are safe under the intended conditions of use. The MHLW officially approved the Ministerial Ordinance on the Good Manufacturing Practice for Quasi-Drugs and Pharmaceuticals (GMP Ministerial Ordinance). It refined the compliance requirements for the manufacturing and quality management of the manufacturing facilities of pharmaceuticals and quasi-drugs. In March 2021, the Japanese Standards of Quasi-drug Ingredients (JSQI 2021) was introduced, laying down new quasi-drug application rules and new permitted quasi-drug additives list, amending the JSQI 2006. There is a pressing need for more study into viable alternatives to animal experimentation. Specifications for both the completed product and the raw materials must be stated in the registration dossier, and an analytical certificate must be produced to demonstrate compliance with these standards. This study outlines the regulations that the quasi-drugs and cosmetics fields have followed, as well as the trends of various standards such as cosmetics standards and quasi-drug raw material standards, as well as international standards.

Key words: *Quasi drugs, cosmetics, regulation, Import requirements, pharmaceutical affairs law.*

OR/ST6/0015

Pathway For Regulatory Approval of Biologics in the US

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Abstract: Biological drugs are typically composed of huge, intricate molecules. They are being developed for rare, difficult-to-treat, and incurable disease states, as well as to create new therapeutic choices for treatable disorders. They are expanding rapidly in the United States and are now the medicinal product category with the highest growth rate. The FDA has discovered potential safety risks associated with the use of biological products by patients. Additionally, the FDA evaluates new biological products and new indications and applications for already-approved medications for the treatment of established disorders. Concerns include inappropriate or inadvertent biological product substitution and pitfalls in biological product pharmacovigilance monitoring. Recent FDA guideline analyzes issues, provide solutions, and outlines biological product naming terminology. The Center for Biologics Evaluation and Research (CBER) is the FDA division responsible for regulating biological products for human use in accordance with applicable federal laws, including the Public Health Services Act (PHS) and the Federal Food, Drug, and Cosmetics Act. CBER seeks to preserve and improve public health by ensuring the safety and efficacy of biological products. The document describes the regulatory evolution of present biologics regulations, the methods for advancing them, and the necessary quality certifications. It also contains the Biological Acts, the History of Biologics according to US regulations, the biologic drugs regulated by the CDER and CBER, the combination drugs regulated by both the CDER and CBER, the registration procedure for new biologics, the application form (BLA), and the instructions required for filling out the application.

Keywords: *Biological products, Food and Drug Administration, Center for Biologics Evaluation and Research, Center for Drug Evaluation Research, Biologics License Applications.*

OR/ST6/0016

MEDICAL DEVICE-GLP SPECIFICATIONS

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Abstract: In the context of the principles of Good Laboratory Practice (GLP), the study of medical devices and drug-device combinations presents some unique challenges. The interpretation of the laws is necessary because of the complex nature of medical devices, that may be implanted or external, or consisting of numerous sophisticated pieces like software, hardware, or medications to accomplish their intended duty. The reality that medical devices may be worn on the body or implanted in a patient is a consideration that has to be included into any applicable legislation. All of the components and standards of the quality system must be met for research to be considered GLP-compliant. The regulations specify these necessities and zones. In addition to outlining the requirements for the layout and selection of hardware and software, GLP rules define out the technical particulars of the necessary support systems. The pharmaceutical industry makes extensive use of medical devices, and this study explore details and strategies for GLP compliance. In addition, more attention is paid to the evaluation of some aspects of the GLP requirements.

Keywords: *GLP Regulations, clinical testing, non-clinical testing, specifications.*

OR/ST6/0017

MEDICAL CANNABIS: REGULATORY REVIEW IN UNITED STATES AND EUROPEAN UNION

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Cannabis is a plant of the Cannabaceae family that contains bioactive chemicals such as delta-9-tetrahydrocannabinol and cannabidiol, which are widely used as illegal narcotics. Medicinal cannabis refers to the use of cannabis for medical purposes, such as the treatment of any disease or condition. Due to the obvious variety of pharmacological and medicinal applications of cannabis and its derivatives, there has been a rise in interest in cannabis development. As it poses a general health risk and is still being studied for clinical purposes, a guideline is also required for safe usage. According to market research, medicinal cannabis development is presently well-marked globally, including both the United States (US) and the European Union (EU). The Food and Drug Administration (FDA) is chiefly responsible for regulating cannabis and its derivatives in the US. Likewise, guidelines in the EU are attempted by the European Medicines Agency (EMA) following regional regulation of EU member states. The regulations for both regions vary significantly. Regulation differs from each member state within the European Union. This review article will provide a brief overview of the recently developed regulations in each region, resulting in a better understanding of the regulatory differences between them.

Keywords: *Medical Cannabis, Regulations, United States, European Union*

OR/ST6/0018

PERIODIC RE-QUALIFICATION OF HVAC SYSTEM

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Abstract: HVAC system as a part of air handling unit comprises of heating, ventilation and air conditioning and is an integral component of Pharmaceutical industry. It is a utility system that would bear a direct impact on product quality and efficacy. The target is to provide a suitable environment for manufacturing and storage of life-saving drugs and medicine and to create a safe working space for personnel inside the industry. The purpose of this study was to perform re-qualification of an HVAC system. Validation was carried out to ensure and document that system is working effectively as per acceptance criteria. As a part of Re-qualification, a periodic validation study was carried out in a resting state to assure the HVAC system is operating appropriately by evaluating with the following parameters like Air exchange per hour, HEPA filter integrity, non-viable particle count, recovery, and airflow pattern test. The above-stated tests were carried out using calibrated instruments and the results were found to be satisfactory as they complied with the acceptance criteria. Therefore, it can be concluded that the HVAC system was validated.

Keywords: *HVAC, AHU, Validation, Qualification, Re-qualification, ACPH, Airflow.*

OR/ST6/0019

Development And Validation Of Analytical Method For The Estimation Of Drug Metochlopramide Hydrochloride And Dexamethasone Sodium Phosphate By HPLC

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Abstract: A simple precise and rapid High Performance Liquid Chromatography method was developed for simultaneous determination of metoclopramide hydrochloride and dexamethasone sodium phosphate in bulk and pharmaceutical dosage form. The method was carried out on RP-C18 column (Chromosil, 250×4.6mm id, 5micron particle size) and SPD-M20 detector by using methanol: water as mobile phase at flow rate of 1ml/min .The quantification was carried out at 260 nm. The retention time of metoclopramide hydrochloride and dexamethasone sodium phosphate was 1.845min and 2.773min respectively. Calibration curve was plotted. Drugs show good correlation coefficient and linearity. The developed method was validated according to ICH guidelines, it was found to be accurate precise and selective method for the simultaneous determination of metoclopramide hydrochloride and dexamethasone sodium phosphate.

Keywords: *Metochlopramide hydrochloride, Dexamethasone sodium phosphate, RP-HPLC, Simultaneous determination.*

OR/ST6/0020

Regulation of Special Packaging: Child Resistant Packaging

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Abstract: Child-Resistant Packaging is a specialised packaging that is utilised to lessen young children accidentally eating potentially harmful substances. The Poison Prevention Packaging Act of 1970, revised in 1995, gives the United States Consumer Product Safety Commission the ability to regulate this matter. The amendments made in 1995 include senior-friendly packaging, which went into force in 1972. There are regulations in place to ensure the safety of children when it comes to prescriptions, over-the-counter medications, insecticides, household chemicals, and unit packaging such as blister packages. Child-resistant packaging is a challenge for the elderly and those with disabilities. Package and performance tests for child resistance and senior friendly are required by the regulations. Certain standards for special packaging like ISO 8317 Requirements and testing procedures for re-closable packages, EN 862 (2005), EN 14375 (2003), ISO 13127 Mechanical test methods for re-closable child resistant packaging, ASTM D3475 Standard Classification for Child-Resistant Packages. Use of CRP Indices such as Package Type (e.g., Aerosol over cap), ASTM Type (e.g. re-closable packaging – continuous thread closure). CRP Manufacturer, CRP Name etc. Reckitt Benckiser is requesting that the Food and Drug Administration (FDA) not only mandate child-resistant, unit-dosed packaging but also provide educational campaigns with the goal of lowering the probability that children will be exposed to buprenorphine drugs, which are used to treat opioid dependence. However, these regulations are based on protocols of performance tests with actual children to evaluate whether packages can be opened. Recently, additional package testing has been implemented to assess whether elderly or disabled users can open identical packages.

Keywords: *Child-Resistant packaging, Performance tests, Special packaging.*

OR/ST6/0024

VALIDATION OF AUTOCLAVE

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Abstract: The purpose of this study was to perform validation of a double door autoclave/steam sterilizer which was located in a microbiology laboratory, used for routine sterilization of various loads. The study was mainly focused on operational and performance qualification. During the operational qualification, bowie-dick test was carried out to check for effective air removal and effective steam penetration. Empty chamber heat distribution was carried out to check for absence of cold spots and to check for uniform heat distribution, in order to provide a sterilizing environment. During the performance qualification, loaded chamber steam penetration test was carried out on various loads. The loads include article patter-1 (minimum and maximum), article pattern-2 (minimum and maximum), solid load (minimum and maximum) and liquid load (minimum and maximum). The test was carried out to determine which load item(s) were the most difficult to sterilize, and which location(s) with the item(s) presented the worst case conditions. Resistance temperature detector (RTD) sensors and steam integrators (strips) were used to determine the worst-case item(s) and location(s). Biological challenge test was also carried out on the loads using suitable biological indicators to provide a sterility assurance level (SAL) of 1 in a million 10-6. The results were found to be within targeted limits and met the desired acceptance criteria. Therefore, it can be concluded that, the autoclave was validated and ready for the use.

Keywords: *Validation, vertical autoclave, performance qualification, operational qualification.*

OR/ST6/0025

ANALYTICAL METHOD VALIDATION OF ASSAY METHOD FOR CEFTIOFUR SODIUM INJECTION BY USING HPLC

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Abstract: Ceftiofur Sodium is the third-generation cephalosporin, broad spectrum antibiotic. It's being used to treat and manage illnesses caused by pathogenic microorganisms in cattle and pigs. It works well enough against most gram-negative bacteria, particularly Enterobacteriaceae. Quantitative assay deals with or determines how much or what amount of the substances or compounds in a sample or in mixture. An analytical method validation was done of assay method for Ceftiofur sodium by using RP-HPLC. This method is economical, accurate and fast. For validating the dissolution method through HPLC mobile phase was prepared. The mobile phase used in this study was Ammonium acetate buffer solution: Methanol: Tetrahydrofuran in the ratio 70:20:11. The chromatographic conditions in HPLC were Zorbax SB C-18, 150 X 4.6mm 5µm or equivalent is used as a column with flow rate 1.5 mL/min at 40°C. The Injection volume of the sample was 20 µL. Detection was done at 254nm using Photo Diode Array detector (PDA). Various standard solvent were examined in the stretch of 20% to 150%. The regression co-efficient and correlation co-efficient was 0.99. This study helps in the determination of assay method for ceftiofur sodium injection.

Keywords: *Ceftiofur sodium, RP-HPLC, PDA detector, Analytical method validation, Quantitative assay*

OR/ST6/0026

Internet of Things (IoT) in Healthcare: Regulatory Challenges

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Abstract: The "Internet of things (IoT)" is a modern-day phenomenon that defines physical objects or groups of such objects, with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks. The field has evolved due to the convergence of multiple technologies, including ubiquitous computing, commodity sensors, increasingly powerful embedded systems, and machine learning. The IoT paradigm has been extensively applied to several sectors in the recent past, ranging from simpler applications on self-care through wearables and trackers, to automated households, to various industries to the entirety of smart cities. In the healthcare domain, IoT opens doors for potential new scenarios of healthcare delivery as well as to collect, compile and process healthcare data in real-time from sensors to make informed decisions. However, this domain is complex and presents several technological and regulatory challenges. There are a number of concerns about the risks in the growth of IoT technologies and products, especially in the areas of privacy and security, and consequently, industry and governmental moves to address these concerns have commenced, including the development of international and local standards, guidelines, and regulatory frameworks. This paper is an attempt to highlight the current regulatory scenario and the potential challenges for IoT in healthcare.

Keywords: *Internet of Things (IoT), Healthcare Technology, Regulatory Challenges, Sensors, Connected Devices, Medical Devices*

OR/ST6/0027

Regulatory Requirements and Registration Process of Nutraceuticals in Japan and China

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Abstract: Based on several studies and media reports, it has been found that there has been misleading information circulated by various companies about their products' safety. As a result, in several countries, Governmental regulatory authorities have been implemented stringent regulations in terms of product safety and associated claims. In Japan, Ministry of Health, Labour and Welfare (MHLW) have introduced two methods of food registration which are Foods for Specified Health Use (FOSHU) and Foods for Special Dietary Use (FOSDU). In China, similar process in the form of Health Food (HF), registration has been introduced by National Medical Products Administration (NMPA). Due to demanding nature of the regulation, stringent guidelines, unfamiliarity with the registration process and lack of knowledge about the regulations increases the chances of failure to obtain marketing approval. The objective of the study is to compare the regulations put in place to monitor food and nutraceuticals in two countries. This provides valuable information to consumers regarding the health foods they consume and will help companies to develop a proper marketing strategy to sell their products in Japanese and Chinese markets. Several similarities and differences in nutraceutical registration were noticed; primary challenge being that of lengthy registration process of China compared to Japan and the cumbersome authorisation burden placed on the applicants can be reduced by exempting few categories of health claims from the registration process.

Keywords: *FOSHU, FOSDU, Health Food, Nutraceutical*

OR/ST6/0028

Regulatory Requirements of Medical Devices in United States of America

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Abstract: Now a days Medical Device Market has been increased tremendously day by day. In order to market any Medical Device in United States of America it is difficult to getting authorization from regulating authorities. The regulating authority of Medical Devices in USA is United States of America Food and Drug Administration. The present work objective is the stakeholders are marketize the Medical Devices in USA to get the approval from USFDA'S Center for Medical Devices and Radiological Health (CDRH), know the Risk based classification of the Medical Devices and the basic Regulatory Requirements of the Medical Devices according to FDA's CDRH. CDRH involving in manufacturing, packaging, labeling and import or Export of Medical Devices in USA.

Keywords: *Medical Devices, requirements, regulatory authority, USA, FDA, USFDA, and CDRH.*

OR/ST6/0032

STERILIZATION METHODS OF MEDICAL DEVICE AND IMPLANTS

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Abstract Medical devices play a crucial role in day -to-day lives of human beings as a tool for diagnosis, detection, imaging and treatment of various benign/malignant conditions of human body. In order to prevent nosocomial infection, which can ultimately lead to implant failure and catastrophic sickness, sterile implants and equipment should be inserted into any animal body. Implants that are not sterile can kill the host system. The elimination of all living organisms, including viruses, bacteria, yeasts, and moulds, is therefore absolutely necessary to establish sterility. Implants can be sterilised using many different methods. Glutaraldehyde solution, Formaldehyde, Peracetic acid, Dry heat, Ethylene Oxide (EtO), Chlorine dioxide, Ozone (O3), Vapor phase Hydrogen Peroxide (H2O2), Low temperature gas plasma, and Radiation [Machine generated X, Gamma, Universal homogeneous ultraviolet (UHUV) rays, Accelerated electron beam are some of the commonly used methods for sterilisation The properties of the implant are impacted differently by each technique. Sterilization-related difficulties should be taken into account as early as possible, during the implant creation process, in order to produce a more affordable and easily sterilizable end product because sterile conditions should be maintained until the moment of implantation.

Key words: *Implants, Sterilization techniques, Medical devices, Radiation, Accelerated electron beam, Flash steam.*

OR/ST6/0035

REQUALIFICATION OF ULTRA LOW TEMPERATURE (ULT) FREEZER

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Abstract: The purpose of this requalification is to study the effectiveness of temperature mapping study for empty chamber heat distribution, loaded chamber heat penetration Set Temperature -80^{0}C (-75^{0}C to -85^{0}C) ultra-low temperature freezer located in lab. The ultra low temperature freezer is qualified as a part of periodic requalification. The frequency for periodic requalification is once in a year. Hence ultra-low temperature freezer shall be qualified in order to check that it is operating as per the defined acceptance criteria and is consistent with respect to its performance requirement. For all pharma ULT freezers there are definite standards quality requirements and quality requirements. This is to make sure regularity, safety, optimal performance and consistency of the entire equipment. This study was carried using brainchild (PR20) data logger. A total of 11 sensors were used, which are kept at specific location inside the ULT Freezers throughout the study period. Based on the acceptance criteria of study protocol, Temperature inside the ULT Freezer were maintained between -75^{0}C to -85^{0}C.

Keywords: *Temperature mapping, Ultra Low Temperature Freezer, Data logger.*

OR/ST6/0036

Process Validation of Ceftiofur Sodium for injection 1g/vial

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Abstract The purpose of the research investigation was to study the prospective process validation of 'Lyophilised Ceftiofur Sodium for injection 1g/vial'. Three initial production batches of the same quantity, method, equipment and validation criteria were taken. The critical process parameters involved in manufacturing like environmental conditions, compounding process sterilisation process filtration, filling (half-stoppering), lyophilisation [(loading and un-loading) (fill-stoppering)] & sealing were identified and evaluated as per process validation protocol. All the instruments were calibrated and equipment were validated as per standard operating procedures. The RSD for content uniformity was optimum in the batch as it was found to be below 6% and the drug content of the reconstituted powder was found to be within the limit 90%-110%. The critical process parameters and conditions were under prescribed control during the manufacturing processes. The outcome states that the data obtained by process validation of three batches of ceftiofur sodium provided high degree of assurance that all the process variables were optimised and meets the proposed acceptance criteria. The lyophilised Ceftiofur Sodium for injection was found to meet their pre-determined specification and quality attributes.

Keywords: *Process validation, Ceftiofur Sodium, critical process parameters, critical quality attributes.*

OR/ST6/0038

Current regulations of Herbal medicines in US and EU

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Abstract This study is about regulatory position of herbal products for America and Europe in order to understand the many divisions in which the sale of herbal goods is authorized, as well as the premarketing procedures. A thorough evaluation was carried out in order to identify the impediments to the standardization of herbal goods. Aside from the challenges of herb supply and preservation, present is a shortage of uniformity happening the supervisory standards of herbal products globally. These are impeding international commerce and the expansion of the herbal goods market. The USFDA classifies botanical items as drugs, foods, or dietary supplements based on their intended usage. A drug is a component that is employed to avoid, identity, mitigate, treat, or cure a disease. If a botanical product is intended to impact the structure or function of the human body, it may be categorized as a medication or a nutritional supplement. As per FDA, the medication must be sold under a permitted New Drug Application (NDA). The European Medicine Agency (EMA) has established two methods for registering herbal medical items: A comprehensive marketing license is obtained by submitting a dossier containing data regarding the quality, safety, and efficacy of the medical goods, including physicochemical, biological, or microbiological testing, as well as pharmacological, toxicological, including clinical trial data; A streamlined procedure exists under Directive 2004/24/EC for traditional herbal medicinal products that do not require medical surveillance and where proof of long traditional use of therapeutic goods exists and adequate medical journals to illustrate a well-established medicinal usage cannot be offered.

Key words: *Harmonization, herbal drugs, herbal products, botanical product, traditional medicine.*

OR/ST6/0039

TIME REDUCTION IN QMS PROCESS

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Abstract: The design of packaging materials is very important to pharmaceutical companies. Packaging expenditures in the sector are on the rise at a rapid pace. This process involves making layouts and artwork, reviewing them, and getting approval for them. All of these tasks are done manually, which slows things down. The goal of Artwork management is to automate the whole design-to-print process. It gets around the tedious and long art process and gives accurate data by getting rid of mistakes. The aim of this project is to identify & remove non-value teams in GTR process & saving time and increasing the efficiency. To enroll all the review & approving CFT members for change managements related to packaging development activities in TrackWise process which is done by using tools like swimlane diagram used for analyzing the process flow, value stream mapping used for identifying non-value-added activities in artwork process, box plot for distribution of GTR TAT during the time period and variability, Microsoft excel to populate data & generate required charts. Power point tool for developing presentation of project charter, data & summary. Form filings, online approvals, and version controls speed up and improve the artwork creation process.

KEYWORDS: *QMS, Change Control, Trackwise, GTR*

OR/ST6/0040

USFDA's Perspective on Real World Evidence

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Abstract: Real world evidence (RWE) and data (RWD) are playing significant role for the regulatory decisions. RWE and RWD offers an ample of opportunities for the assessment of safety, performance and risk-benefit profile of healthcare products. Considering the contributions of information technology in the healthcare domain, gathering of such evidences would ease the regulatory agencies for making the policies for product development and lifecycle management based on the RWE. Through the systematic review of various information released by FDA, we attempted to collate and analyze FDA's perspective on RWE and RWD to aid in regulatory decision. The 21st Century Cures Act enacted in 2016 is the legislation governing the utilization of RWE and RWD by FDA. Currently, FDA's perspective in the context of RWE and RWD includes sponsors to comply with applicable relevant legal frameworks, not to consider this as a typical clinical trial and to ensure data privacy. FDA is expecting sponsors to approach in early stage of planning to review the design and execution of such studies. RWE and RWD collection process shall be conducted based on protocol and statistical plan approved by FDA. The sponsor shall have adequate access to the data source and be able share with FDA as and when requested. To ensure the reliability and data integrity, sponsor shall undertake sufficient study monitoring. Sponsor should notify the adverse events as per the relevant safety reporting requirements. Considering the various evidences, we concluded that FDA has taken stride towards the development of ecosystem for better utilization of RWE and RWD. This approach is expected to support the critical decisions and to make policies and tools for the usage in real clinical practice.

Keywords: Real World Evidence, Real World Data, Food and Drug Administration.

OR/ST/0041

India and Australia Regulatory Strategies for Orphan Drug Approval Process

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Abstract: Medicines or vaccines designed to treat, prevent, or diagnose a rare condition (such as Huntington's disease, myoclonus disease, Tourette syndrome, etc.) are called orphan drugs. Rare diseases are defined by their prevalence, severity and the existence of alternate treatment options, which vary from jurisdiction to jurisdiction. The prevalence of a rare disease varies from area to region and country to country depending on the laws and policies in place. More than 35 years after it was first introduced, the Orphan Drug Act (ODA) has been implemented in a number of nations throughout the world (such as the United States; Australia; the European Union; Japan; and so on). Drugs to cure these diseases are being studied and produced at a faster rate than the rate at which they are appearing in the population. The pharmaceutical business isn't interested in developing orphan medications because they don't have a large market share. In spite of the orphan drug act's numerous incentives, this is the current situation. It was found that countries such as the United States, the European Union, Canada, and Australia place a greater emphasis on current legislation, principles of rare disease, and drugs, as well as integrated approaches. Due to the fact that India is the most populous country in the world, orphan medications and rare diseases lack national regulation, which could have a significant impact on their patient populations with uncommon diseases.

Key words: *Rare diseases, Orphan drugs, Orphan Drug Act, Legislation*

25th APTICON-2022

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RESULTS OF POSTER PRESENTATION

STREAM 1: Pharmaceutical Technology and Pharmaceutics

PT/ST1/00179	NUPUR CHOUDHARY	JSS COLLEGE OF PHARMACY, MYSURU 9720870627	FORMULATION AND EVALUATION OF PROLIPOSOMES FOR POORLY SOLUBLE DRUG
PT/ST1/00202	LENISHA ASHLYN SEQUEIRA	JSS COLLEGE OF PHARMACY, MYSURU 7022843848	COSMECEUTICAL GELS OF SELECTED ESSENTIAL OILS FOR THE MANAGEMENT OF SEBORRHIC DERMATITIS

STREAM 2: Pharmaceutical Medicinal Chemistry/ Pharmaceutical Analysis

PT/ST2/0064	VARUN.H.B	KRUPANIDHI COLLEGE OF PHARMACY, BENGALURU 6363240181	ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR ESTIMATION OF NEVIRAPINE BY LC-MS/MS IN HUMAN PLASMA
PT/ST2/0070	SUMERA	ADITYA BANGALORE INSTITUTE OF PHARMACY AND RESEARCH 9980472731	PHARMACOPHORE BASED VIRTUAL SCREENING TOWARD THE DISCOVERY OF NOVEL BLK (B-LYMPHOCYTE KINASE)

STREAM 3: Pharmacognosy, Phytochemistry and Biotechnology

PT/ST3/0082	KETAKI DHANE	INDIRA INSTITUTE OF PHARMACY, SADAVALI DEVRUKH, RATNAGIRI	EVALUATION OF THE IMPACT OF THE AYURVEDIC FORMULATION AMRUTHOTHARAM ON OBESITY-RELATED DIABETIC AND HEPATIC DISORDERS
PT/ST3/004	DR. SANTANU SAHA	NGSM INSTITUTE OF PHARMACEUTICAL SCIENCES 9916222729	EVALUATION OF IMMUNOMODULATORY EFFECT OF AQUEOUS EXTRACT OF BAUHINIA VARIEGATA L. LEAVES

STREAM 4: Pharmacology and Toxicology

PT/ST4/0087	BABIKER BASHIR HAROUN BARAKA	KLE COLLEGE OF PHARMACY, BENGALURU 7338560640	INVESTIGATION OF ENRICHED ENVIRONMENT AND PREPARATION OF TRIBULUS TERRESTRIS AND CELASTRUS PANICULATA
PT/ST4/0039	MARY MANISHA MANNAM	St. PAUL'S COLLEGE OF PHARMACY 8008724862	STRUCTURAL BIOLOGY PAVING LIGHTS TO IMPROVE THE QUALITY OF LIFE

STREAM 5: Pharmacy Practice and Pharmacy Education

PT/ST5/0046	SHRIBHAVANA J	SRI RAMACHANDRA INSTITUTE OF HIGHER EDUCATION AND RESEARCH 8056275757	PHYSICIANS' PERSPECTIVE TOWARDS DEPRESCRIBING OF MEDICINES IN CHRONIC DISEASES: A QUESTIONNAIRE-BASED STUDY

PT/ST5/0025	NANDHITHA SATHEESAN	NATIONAL COLLEGE OF PHARMACY, MANASSERY, KOZHIKODE 8281244765	POST COVID RESPIRATORY SEQUELAE AND THEIR MANAGEMENT IN A TERTIARY CARE TEACHING HOSPITAL
PT/ST5/0045	CHANDANA C	SREE SIDDAGANGA COLLEGE OF PHARMACY, TUMAKURU 9901957875	A META-ANALYSIS ON MISUSE OF PRESCRIPTION/OTC DRUGS: HOW PHARMACIST CAN PREVENT AND MANAGE DRUG ABUSE
PT/ST5/003	RAJESH HADIA	SUMANDEEP VIDYAPEETH DEEMED TO BE UNIVERSITY, VADODARA, GUJARAT, INDIA 9590677280	A PROSPECTIVE OBSERVATIONAL STUDY TO EVALUATE THE PREVALENCE OF ADVERSE DRUG REACTIONS (ADRS) AND ITS IMPACT ON QUALITY OF LIFE IN PSYCHIATRIC PATIENTS AT A TERTIARY CARE TEACHING HOSPITAL

STREAM 6: Pharmaceutical Regulatory Affairs and Pharmaceutical Quality Assurance

PT/ST6/0016	REUBEN NAZARETH	JSS COLLEGE OF PHARMACY MYSURU 7776062342	AN OVERVIEW OF ORPHAN DRUG REGULATIONS IN THE EU
PT/ST6/0049	TURRE T R	SMT. KISHORITAI BHOYAR COLLEGE OF PHARMACY, KAMPTE, NAGPUR	ASSESMENT OF ACTIVITY OF VARIOUS EXTRACTS OF LEUCAS BIFLORA LEAVES AND GREEN SYNTHESIS OF SILVER NANOPARTICLES OF ACTIVE EXTRACT

APTI - BEST POSTER AWARD

PT/ST2/0064	VARUN.H.B	KRUPANIDHI COLLEGE OF PHARMACY, BENGALURU 6363240181	DRUG DEVELOPMENT FOR ALZIMERS DISEASE

RESULTS OF ORAL PRESENTATION

STREAM 1: Pharmaceutical Technology and Pharmaceutics

OR/ST1/0080	Dr. JAWAHAR NATARAJAN	JSS COLLEGE OF PHARMACY, OOTY 9486946314	TERBINAFINE HCL FILM-FORMING SPRAY FOR THE TREATMENT OF TOPICAL FUNGAL INFECTIONS
OR/ST1/0051	SANJANA. A	D. R. KARIGOWDA COLLEGE OF PHARMACY 9483371165	FLAX SEED ANASTROZOLE NANOPARTICLES: AN EFFECTUAL TREATMENT FOR BREAST CANCER TREATMENT
OR/ST1/0047	KOMAL SAVADATTI	JSS COLLEGE OF PHARMACY, MYSURU 7019606145	FABRICATION AND EVALUATION OF NERATINIB LOADED MULTIWALLED CARBON NANOTUBES FOR CANCER MANAGEMENT
OR/ST1/0030	ARCHANA MANJUNATH	KRUPANIDHI COLLEGE OF PHARMACY 9901105809	ASSESSMENT OF SOLID-STATE BEHAVIOUR AND IN VITRO RELEASE OF ARTEMETHER FROM LIQUISOLID COMPACTS USING MESOPOROUS MATERIALS AS AN EXCIPIENT

STREAM 2: Pharmaceutical Medicinal Chemistry/ Pharmaceutical Analysis

OR/ST2/0070	AKSHATHA H. S	JSS COLLEGE OF PHARMACY, MYSURU 9480525999	PROTEIN MODELLING AND CONFORMATIONAL ANALYSIS OF MORTALIN-P53 PROTEINS BY HOMOLOGY MODELLING & PROTEIN-PROTEIN INTERACTION STUDIES
OR/ST2/0069	KUSUMA KUMARI GARIKAPATI	JSS COLLEGE OF PHARMACY, OOTY 7095765210	DEVELOPMENT AND VALIDATION OF A SENSITIVE LC-MS/MS TECHNIQUE FOR PIOGLITAZONE VS SURFACE MODIFIED PIOGLITAZONE NANOPARTICLES: APPLICATION TO PHARMACOKINETIC AND TISSUE DISTRIBUTION STUDIES IN RATS

STREAM 3: Pharmacognosy, Phytochemistry and Biotechnology

OR/ST3/0027	GURUGUBELLI SOWJANYA	ANDHRA UNIVERSITY 9100044007	PRODUCTION OF L- TYROSINASE FROM VARIANTS OF STREPTOMYCES CELLULOSAE (PD26 & PD18), PROMISING SOURCES FOR POTENTIAL BIOACTIVE COMPOUNDS
OR/ST3/0010	SHANTHINI NACHIAR	SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY 8838571850	HPTLC COMPARISION STUDIES WITH MARKER COMPOUND AND ISOLATION OF A FLAVONOID FROM ETHANOLIC LEAF EXTRACT OF RIVEA HYPOCRATERIFORMIS(DESR.) CHOISY

STREAM 4: Pharmacology and Toxicology

OR/ST4/0021	DR. SNEHA R BAGLE	D Y PATIL SCHOOL OF PHARMACY 8976523763	APOCYNIN: A POTENTIAL MOIETY THAT CAN TREAT THE UNDERLYING AD PATHOLOGY AND SYMPTOMS
OR/ST4/0044	MANISH AGLAWE	SMT. KISHORITAI BHOYAR COLLEGE OF PHARMACY, KAMPTE, NAGPUR 9511737205	AGMATINE-NPY INTERPLAY IN PARAVENTRICULAR NUCLEI REGULATES PUBERTAL ENDOCRINE PHYSIOLOGY

STREAM 5: Pharmacy Practice and Pharmacy Education

OR/ST5/0059	DR D PRAVEEN	ST PETER's INSTITUTE OF PHARMACEUTICAL SCIENCES 9940510419	IMPACT OF IMPLEMENTATION OF OUTCOME BASED EDUCATION USING PROBLEM BASED LEARNING AND BLENDED LEARNING TOOLS IN CLINICAL PHARMACY EDUCATION
OR/ST5/0061	DR. REMETH JACKY DIAS	GOVERNMENT COLLEGE OF PHARMACY, KARAD 9552826440	IMPACT OF USE OF MODERN PEDAGOGY IN TEACHING PHARMACY STUDENTS

STREAM 6: Pharmaceutical Regulatory Affairs and Pharmaceutical Quality Assurance

OR/ST6/0014	THANUSH D	JSS COLLEGE OF PHARMACY, MYSURU 7019206448	REGULATORY PERSPECTIVES OF QUASI DRUGS IN JAPAN: TRANSITION OF REGULATIONS AND QUASI-DRUG RAW MATERIAL STANDARDS
OR/ST6/0010	SANGITA MISHRA	JSS COLLEGE OF PHARMACY, MYSURU 9900410814	ORPHAN DRUG PRICING AND COST TRENDS IN USA: AN ANALYSIS OF IMPACT OF ORPHAN DRUG ACT
OR/ST6/0019	SHIBILA.NT	AL-SHIFA COLLEGE OF PHARMACY 9746718477	DEVELOPMENT AND VALIDATION OF ANALYTICAL METHOD FOR THE ESTIMATION OF DRUGS METOCLOPRAMIDE HYDROCHLORIDE

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