



## International Journal of Pharmaceutical Sciences & Research

### Conference Proceedings

**Chief Editor: Dr. Shashi Alok**

**Managing Editor: Mrs. Monika Sabharwal**

**Special Issue Editor(s): Dr. Saurabh Satija, Dr. Manish Vyas**

**Dr. Navneet Khurana, Dr. Meenu Mehta**

# PHYTOCON

## 2018

### International Conference

On

### Commercialization of Medicinal Plant Products: Lab Techniques to Trade

**Saturday, April 14, 2018**

Organized by

**School of Pharmaceutical Sciences**

**Lovely professional University, Phagwara,**

**Punjab (India)**

Technology Partners

World Leader in Planar Chromatography

HPTLC specialists since 1978

## **Message from the Chairman-LOC**

It is my pleasure to welcome all the invited speakers and delegates to PHYTOCON 2018 here at Lovely Professional University, Phagwara, Punjab. As organizing chairman of this event, I hope to bring together a good program that stimulates both our domain knowledge and scientific intellect. This will be through a combination of interesting lectures and exhibition that will enrich our current knowledge and skills. A holistic and interactive approach has been employed in planning the scientific sessions.

We hope you will take this opportunity to plan and attend the conference to share, celebrate and together create a new history for the pharmacy profession in India. The organizing committee is gratified to have a line-up of highly renowned speakers consists of experts who agreed to shed light on research and issues that shape our pharmacy profession. Various programmes consisting of keynote, plenary, sponsored session have been assembled. Additionally, there will also be opportunities for students, researchers and practitioners to share their research and contribution towards the success of our professions through oral and poster presentations.

We hope this conference will offer participants a platform to exchange ideas, discover novel opportunities, reacquaint with colleagues, meet new friends and broaden their knowledge. Further, this conference will provide the perfect forum for both faculty and participants to interact and possibly discuss future collaborations. On behalf of the organizing committee, I would like to extend a warm invitation to all our colleagues to join us at this event.

The committee looks forward to meeting you in **Punjab!**

**Prof. Monica Gulati**  
**Chairman, LOC**

# **Message from the Organizing Secretary PHYTOCON-2018**

**I Dr. Saurabh Satija on behalf of  
Local Organizing Committee of PHYTOCON 2018  
welcome you all at the  
“Land of Five Waters - Punjab”**

Thank you all for joining us for this once-in-a-lifetime event, bringing together the world’s experts in Pharmaceutical Science. Our participation in this event recognizes the importance of multi-disciplinary approach, with a focus on theme **“Commercialization of Medicinal Plant Products to Trade”**. The presence of world leaders in the field of Pharmacy will also help ensure that the conference has a definite focus, whilst combining where possible challenges faced to deliver new medicinal plant products for chronic disease.

Many of you have travelled great distances to be here, bringing unique insight and experience. Our hope is to provide you with a forum to discuss new ideas and opportunities, with transformative potential for global health issues. We are pleased to present an interesting and engaging schedule to inspire your participation and we commend this conference program to you.

We hope to meet many of you personally throughout the conference. Please take the time to enjoy both the conference and the delights of vibrant campus of LPU

**Dr. Saurabh Satija  
Organizing Secretary  
PHYTOCON 2018**

## **Message from the Convener, Scientific Services**

On behalf of the Scientific Services committee, I welcome all of you to PHYTOCON 2018. With great pleasure and sense of gratitude, I wish to present to you the scientific proceedings of PHYTOCON. The conference will include plenary lectures, exhibition and workshops. The speakers will highlight the importance of medicinal plants in health care.

The highlight of the conference includes post conference Author Workshop on “How to Write and Publish Scientific Articles and Manuscripts”. The conference proceedings are being published as a special issue of International Journal of Pharmaceutical sciences and Research.

This conference will also provide a unique opportunity to exhibitors of pharmaceutical industries, companies, distributors, dealers and retailers to display their products. It will provide an opportunity for different stakeholders from the health care community including experienced pharmaceutical and medical professionals, educators, policy makers, seasoned researchers and students to interact professionally and discuss innovations in the field. I would like to thank all the sponsors of the conference and all the organizing committee members for their contribution in the successful conduct of this conference. I hope this conference will prove to be an inspiring and truly transformative experience for you in your professional career.

With kindest regards

**Dr. Amit Mittal**  
**Convener, Scientific Services**

## **Message from the Chairman Scientific Services Committee**

It is with great pleasure that I extend a warm welcome to the International and local experts in the field of Pharmaceutical Sciences to take part in PHYTOCON 2018. I am truly proud that LPU has managed to organize such an important conference which is attracting academic and industrial participation, nationally and internationally. With such diverse and relative large participation, I am sure that this conference will achieve its intent – to serve as an effective platform for us, the research community to learn, share and supplement each other's research, while keeping abreast of the latest trends in this arena. We invite you to use this conference to create new, or to strengthen existing, partnerships between the scientific community, publishers, policy makers and society.

This conference, I hope, true to its theme, will address some of the design challenges and the role of researchers that are capable of achieving the goal not only the Healthy India but the Healthy World. The Scientific Services Committee has packed the conference with a host of expert key note speeches, Invited talks, around 350 research paper presentations along with many exhibition booths. A conference of this magnitude would not have been possible without the dedication and support of each and every one of the committee chairs, organizing members, industry colleagues, sponsors, academic institutes and all supporting organizations. We sincerely hope that the conference in the state of Punjab, known for its rich cultural heritage becomes a grand success.

**Dr. Navneet Khurana**  
**Chairman**  
**Scientific Services Committee**

# PHYTOCON - 2018

## Organizing committee

Sh. Ashok Mittal, Chancellor, LPU

**(Chief Patron)**

Smt. Rashmi Mittal, Pro-Chancellor, LPU

**(Patron)**

Dr. Monica Gulati

**(Chairman, LOC)**

Dr. Saurabh Satija

**(Organizing Secretary)**

Dr. Navneet Khurana

Dr. Meenu

Dr. Manish Vyas

**(Joint Organizing Secretary)**

**Convener, LOC**

Dr. Gopal Lal Khatik

**Co-Convener, LOC**

Dr. Bhupender Singh Tomar

Mrs. Vandana Kalsi

Dr. Surajpal Verma

**Convener,  
Services**

**Scientific**

Dr. Amit Mittal

Dr. Tamil vanan

**Publication  
Communication  
Committee**

**and**

Dr. Sachin Kumar Singh

Dr. Surendra Nayak

Dr. Vijay Mishra

Dr. Udai Chand

Dr. Immanuel Jeyasinghraj

Dr. Pawan Gupta

Dr. Sazal Patyar

Dr. Pranav Kumar Prabhakar

Dr. Jamshed Haneef

Dr. Vivek Gupta

**Co-Convener,  
Scientific Services**

Dr. Ashish Suttee

Dr. Rakesh Narang

**Hospitality Committee**

Mr. Harmanpreet Singh

Mr. Bhupinder Kapoor

Dr. Sheetu Wadhwa

Mr. Gurinder Singh

Mrs. Reena Gupta

Mrs. Mukta Gupta

Mrs. Barinderjit Kaur

Mr. Abhinav Anand

**Registrations Committee**

Dr. Meenu

Mrs. Neha Sharma

Ms. Ruchi Sharma

Mr. Sujit Bose

Ms. Chandani

Ms. Deepshikha

Ms. Arshvir Kaur

Mr. Rajesh Kumar

**Transportation Committee**

Mr. Dileep Singh Baghel

Mr. Ankit Yadav

Mr. Manjinder Singh

Mr. Harpreet Singh

Mr. Gopal Kishan

**Finance and Purchase Committee**

Mr. Saurabh Singh

Mr. Arvinder Singh

Mr. Gurpreet Singh

Mr. Vishal Bangar

Mr. Gurdeep Kumar

Ms. Reena Walia

**Volunteer Management Committee**

Mr. Navneet Duggal

Ms. Charanjeet Kaur

Ms. Keerti Bhardwaj

**Stage and Cultural Committee**

Mrs. Neha Sharma

Ms. Jaspreet Kaur

Dr. Anania Arjuna

Ms. Iqbaljit Kaur

Mrs. Geetanjali Tomar

Mrs. Sakshi Sharma  
Dogra

**Accommodation Committee**

Mr. Bimlesh Kumar

Mr. Shiv Gupta

Mr. Sudhakar

Dr. Sheetu

Dr. Suresh Mani

Ms. Chandani

Ms. Iqbaljit Kaur

Ms. Jaspreet

**Web Media Committee**

Mr. Narendra Pandey

Ms. Amrinder Kaur

Ms. Aarti Bhardwaj

Mr. Pradeep Kumar

Mr. Gurwinder Singh

Ms. Charu Khanna



**PHYTOCON-2018**

**PHYTOCON – 2018**

**Theme: Commercialization of Medicinal Plant Products : Lab Techniques to Trade**

**14<sup>th</sup> April, 2018**

**Venue: Shanti Devi Mittal Auditorium  
Lovely Professional University, Phagwara, Punjab**

Day of Conference

14<sup>th</sup> April 2018

Under the patronage of

Sh. Ashok Mittal

(Honorable Chancellor, Lovely Professional University)

07:00-09:00 hrs

Registration and Breakfast

09:00-09:15 hrs

Arrival of Delegates

09:15-09:30 hrs

Arrival of Chief Guest and Guest of Honor

09:30-10:45 hrs

Welcome address

(Dr. Monica Gulati, Chairman Local Organizing Committee)

Inaugural Address

(Prof. Shailendra Saraf, Vice President, PCI, New Delhi)

Honoring the Chief Guest, Guest of Honor, Invited Guests, Speakers

Release of Scientific CD

Vote of Thanks

(Dr. Monica Gulati, Chairman Local Organizing Committee)

Technical Session - I (10:45 – 11:30 hrs) at Shanti Devi Mittal Auditorium

Session Chairman(s) : Dr. Harish Dureja, Dr. Subheet Jain, Dr. Dharendra Kaushik

10.45-11.15 hrs

Predicting Bioavailability from  
Dissolution: Unlocking the mystery of  
herbal drugs

Dr. Umesh Banakar

11.15-11.30 hrs

Promoting technological competitiveness  
and Entrepreneurship in herbal products

Dr. Vandana Kalia

Technical session-II (11:30 – 12:15 hrs) at Shanti Devi Mittal Auditorium

Session Chairman(s) – Dr. Kamini Dhiman, Dr. Harjeet Singh

11:30-12:00 hrs

HPTLC Instrumentation hyphenation and  
applications

Mr. Jayanta Sharma

12:00-12:15 hrs

Shri Ayurveda Seva Sadan

Technical session-III (12:15 hrs – 12:45 hrs) at Shanti Devi Mittal Auditorium

Session Chairman(s) – Dr. Rowena Hughes, Dr. Hema Chaudhary

12:15-12:45 hrs	Springer Nature Online Resources for Research	Mr. Kunj Verma
Cultural Showcase I (12:45 hrs-13:00 hrs)		
Lunch (13:00 hrs to 14:00 hrs) at Block 29-Basement		
Technical Session-IV (14:00-14:50 hrs) at Shanti Devi Mittal Auditorium Session Chairman(s) – Dr. A. N. Kalia, Dr. Sandeep Arora, Dr. Ashish Baldi		
14.00-14:30 hrs	Basic requirements for commercialization of medicinal plants	Dr. Neeraj Tandon
14.30-14:50 hrs	Indian Herbal Industry: Quest for Global Acceptance	Dr. Munish Garg
Technical Session-V (14:50 hrs-15:30 hrs) at Shanti Devi Mittal Auditorium Session Chairman(s) – Dr. J.P. Yadav, Dr. Vipin Saini, Dr. Manish Goswami		
14:50 hrs-15:30 hrs	Stevia Cultivation & extraction and its application & market potential	Mr. Deepak Jindal
Technical Session-VI (15:30 hrs-16:00 hrs) at Shanti Devi Mittal Auditorium Session Chairman(s) – Dr. Gurpreet Kaur, Dr. Preet Mohinder Singh Bedi, Dr. Rohit Dutt		
15:30 hrs-16:00 hrs	Dr. Pradeep Kumar Mattu	
Oral Presentations – I (14:00 hrs-16:00 hrs) at Block 32, HRDC Hall No. 413, Oral Presentations 501-511 Session Chairman(s) – Dr. Neeru Vasudeva, Dr. Rakesh Pahwa Evaluators – Dr. Pankaj Gupta, Dr. Thakur Gurjeet Singh, Dr. Govind Singh		
Oral Presentations – II (14:00 hrs-16:00 hrs) at Block 30-201, Oral Presentations 512-523 Session Chairman – Dr. Suresh Thakur Evaluators – Dr. Balbir Singh, Dr. H.C. Patil, Dr. Prabhakar Verma		
Interactive Session on HPTLC by Anchrom (14:30 hrs-15:30 hrs) at Shanti Devi Mittal Dining Hall		
E-Poster Presentations (14:00 hrs-16:00 hrs) at Block 28 Session Chairman(s) – Dr. Viney Chawla, Dr. Hayat M. Mukhtar		
<p>Session I (Poster 101-130) at 28-101 Evaluators - Dr. Richa Madan, Mr. Amandeep Singh, Dr. Vikramjeet Singh Judge</p> <p>Session II (Poster 131-160) at 28-102 Evaluators - Ms. Neha Makol, Dr. Rakesh Marwaha, Dr. Pradeep Yadav</p> <p>Session III (Poster 161-190) at 28-103 Evaluators - Dr. Kamal. S. Rathore, Dr. Deepak Kapoor, Dr. R. K. Patil</p> <p>Session IV (Poster 191-220) at 28-104 Evaluators - Mr. Kapil K. Goel, Dr. Deepak Kaushik, Dr. Vineet Mittal</p> <p>Session V (Poster 221-250) at 28-105 Evaluators - Dr. Vandana Garg, Dr. Anju Dhiman, Dr. Shelly Khurana</p>		

Session VI (Poster 251-280) at 28-106

Evaluators - Dr. Deepak Bhagwat, Dr. Vijender Singh, Dr. Riju Agarwal

Session VII (Poster 281-310) at 28-107

Evaluators - Dr. Pramod Yadav, Dr. Rohit Goyal, Mr. Amritpal Singh

Session VIII (Poster 311-340) at 28-108

Evaluators - Mr. Ajitpal Singh, Dr. Dimple Sethi, Dr. Dinesh Kumar

Session IX (Poster 221-250) at 28-109

Evaluators - Mr. Ashwani Kumar Jangra, Dr. Shailesh Sharma, Dr. Anurag Khatkar

Session X (Poster 221-250) at 29-302

Evaluators – Mr. Neeraj Pooni, Mr. Parijat Pandey, Mr. Sahil Khatter

Valedictory Function (16:00 hrs-16:35 hrs)

Vote of Thanks (16:35 hrs-16:40 hrs)

Cultural Showcase II (16:40 hrs-17:00 hrs)

**Selected E-Poster Abstracts for Conference Proceeding**

<b>Abstract / E-Poster No.</b>	<b>Presenting Author</b>	<b>Title</b>
PHY-PP-101	Sukhminderjit Kaur	Production of Dextran from Dextranase Producing <i>Leuconostoc</i> Sp. and its Application in Formation of Dextran Coated Iron-oxide Nanoparticles
PHY-PP-102	Neha Sharma	Turmeric: A Review on Ethnomedicinal uses, Phytochemistry and Pharmacological Aspects
PHY-PP-103	Suchitra	Abuse Deterrent Technology
PHY-PP-105	Jyoti	Nanotechnology: A New Approach in Herbal Medicine
PHY-PP-106	Kavita Sapra	Transdermal Drug Delivery System: An Emerging Novel Drug Delivery System
PHY-PP-107	Urvashi Saini	Potential Role of Medicinal Plants in Anticancer Treatment
PHY-PP-108	Virender Kumar	Microemulsion and Nanoparticles as A Drug Delivery System
PHY-PP-109	Ramninder Kaur	Pharmacological Significance of Synthetic Peptide Conjugates of Heterocyclic Scaffold
PHY-PP-111	Jessica Oppong Mensah	Role of Biofilms and Their Inhibitors in Chronic Microbial Infections
PHY-PP-113	Garvita Narang	Commercialisation of Processed Crude Drug of Medicinal Importance: Lab Techniques to Trade
PHY-PP-114	Nisha Sansanwal	Marine Products Based Drug Discoveries
PHY-PP-115	Parmita Phaugat	Artificial Sweetener and the Obesity Epidemic
PHY-PP-116	Beena Kumari	Recent Development in Floating Drug Delivery System
PHY-PP-117	Navjot Singh Sethi	Review on Developments and Antimicrobial Activities of 2,4 Thiazolidinedione Derivatives
PHY-PP-118	Azad Singh	High Performance Thin Layer Chromatography Profiling for Different Samples of Haridra Based on Marker Compound (Curcumin) Using Principle of Snyder Triangle Solvent System for Chromatography
PHY-PP-119	Harsh Kumar	Thiazolidin-2,4-Dione as Potent Antimicrobial and Anticancer Agent: A Review
PHY-PP-120	Ashu Sapra	Oxadiazoles as Anticancer Agents
PHY-PP-121	Digvijay Singh	Importance and Necessity of Healing Herbs in Today's Life
PHY-PP-122	Pawan Kumar	In Vitro Antibacterial and Antioxidant Activity of Essential Oil from the Aerial Parts of <i>Agrimonia Aitchisonii</i> Schonbeck Temesy
PHY-PP-124	Monika Dahiya	Effect of Compression Force on Tablet Properties Prepared from Mixture of Avicel and Ac-Di-Sol
PHY-PP-125	Dharamvir Singh	Biological Potential of Furan Derivatives in New Era: A Review
PHY-PP-126	Renu	Niosomes – As a Novel Drug Delivery System
PHY-PP-127	Arpit Srivastava	Edible Vaccines: Improving Plant to Food Biotechnology
PHY-PP-128	Sanjiv Kumar	Design, Synthesis and Biological Activity of Pyrimidine Derivatives as Promising Antimicrobial and Anticancer Agents
PHY-PP-129	Shagufta Habib	In-Silico and in-Vitro Activities of "Citral": An Essential Oil
PHY-PP-130	Reena	Nanoparticles for Dissolution Enhancement of BCS Class II Drugs
PHY-PP-131	Anjali	Cosmeceutical – Cosmetics along with Therapeutic Activity
PHY-PP-132	Prerna Kaushik	Medicated Chewing Gums-A Mobile Drug Delivery System
PHY-PP-133	Hardik Kumar	Crucial Role of Nutraceuticals for Cardioprotection

PHY-PP-135	Bikram Singh	Association of Language and Gender with the Psychological Disorders (Anxiety And Depression) in Undergraduate Pharmacy Students: A Questionnaire Based Survey
PHY-PP-136	Neha Minocha	Potential of Novel Drug Delivery System for Herbal Medicines
PHY-PP-137	Salisha	Theranostics: A Tailored Disease Treatment Approach
PHY-PP-138	Mohit Manchanda	A Comprehensive Review on Recent Herbs having Anticancer Potential
PHY-PP-139	Geetika Sharma	Enhancement of in-Vitro Antioxidant Potential of Terminalia Chebula by Various Fruit Extracts and Optimization of Concentration by Response Surface Methodology (RSM)
PHY-PP-140	Surbhi Bassi	Gastro-Retention as Novel Drug Delivery Approach: An Update
PHY-PP-141	Karan Jangra	Development of Osmotically Controlled Drug Delivery System of Metformin Hydrochloride
PHY-PP-142	Anureet Arora	Formulation and Evaluation of Inclusion Complexes of Atorvastatin using Captisol
PHY-PP-143	Akanksha Mishra	Natural Corrosion Inhibitors for Metals: A Review
PHY-PP-144	Deepti Malik	Various Applications of Transition Metal Complexes: A Review
PHY-PP-145	Gurria	Chamomile: A Precious Medicinal Herb
PHY-PP-147	Maninder Singh	Age and Consumption of Grapes as Significant Predictors of Psychological Distress among Hypertensive Patients: A Hospital Based Survey
PHY-PP-148	Prachee	A Review on Therapeutic Potential of Furan Derivatives
PHY-PP-151	Shubham Kashyap	Biological Activities of Coordination Metal Complexes: A Review
PHY-PP-153	Swati Tyagi	Phytosome: An Emerging Drug Delivery System
PHY-PP-155	Jaswinder Kaur Virk	Ferulic Acid-A Chemical Marker for Differentiation of Official Substitutes/Adulterants of Mahameda (Polygonatum Verticillatum)
PHY-PP-156	Harpreet Madar	Review on Citrullus Colocynthis (Cucurbitaceae): A Bliss Or Bias
PHY-PP-157	Nitika Anand	A Review on Memory Enhancer Drug: Bacopa Monnieri (Scrophulariaceae)
PHY-PP-158	Ravinder Singh	Role of Carica Papaya in Aging as a Potent Antioxidant
PHY-PP-161	Ashish Gakkhar	Ultrasound in Synthetic Organic Chemistry
PHY-PP-162	Sakshi Sabharwal	Natural Remedies for Polycystic Ovarian Syndrome (Pcos): A Literature Review
PHY-PP-163	Vaibhav Walia	Involvement of GABA, Glutamate and Nitric Oxide in the Anxiolytic-Like effects of Pyridoxine in Mice
PHY-PP-164	Vinit Bassi	Apple Cider Vinegar - An Asset
PHY-PP-165	Anmol Sehgal	Caprylic Acid: A Growing Boon
PHY-PP-167	Manpreet Singh	Application of Herbs in Cosmetic Preparations: A Review
PHY-PP-168	Varsha	Chitosan Derivatives: Synthesis and their Biological Evaluation
PHY-PP-169	Deepika Sharma	Design, Synthesis and Biological Study of N-(Substituted Benzylidene)-4-(4-Bromophenyl)-Thiazol-2-Amine Derivatives
PHY-PP-170	Sagar Rana	The Future of Natural Beauty- Herbal Cosmetics
PHY-PP-171	Akshay Aggarwal	Ouabain Analogues as Potent and Selective Non-Hormonal Male Contraceptive
PHY-PP-172	Harpreet Kaur	Production of Strategically Important Polymer Polyhydroxybutyrate (Phb) in Plant Cells
PHY-PP-173	Sukriti Biswas	Regulation on Functional Food
PHY-PP-174	T. Odyuo	ROLE OF PLANTS AS ANTICANCER AGENTS
PHY-PP-176	Kirandeep Kaur	Molecular Characterization of Virus(Es) Infecting Citrus Species in Hoshiarpur District in Punjab

PHY-PP-179	Shivani	The Comparative Preliminary Phytochemical Screening of Different Extracts of “Lagerstroemia Flos-Reginae Retz”
PHY-PP-180	Bhawna	Review on Liquisolid Technique and its Applications in Pharmaceutics
PHY-PP-183	Varsha Kumari	Treatment of Cervical Cancer Using Radiation Therapy and M-Tor inhibitors
PHY-PP-184	Kunwar Pal	Floral Medicines: Future of Cancer Treatment
PHY-PP-185	Rajat Kumar Thakur	Swerita Chirata- A Magical Traditional Herb with Enormous Medicinal Activities
PHY-PP-187	Lavi Kumar Garg	Artocarpus Heterophyllus as a Potent Pharmaceutical Excipient
PHY-PP-189	Sakshi Sharma	Formulation and Evaluation of Post Laser Herbal Cream
PHY-PP-190	Deeksha	Plant Extract of Justicia Gendarussa: A Potent Inhibitor of Drug -Resistant Hiv-1 Strains
PHY-PP-192	Raghav Gupta	Challenges and Prospects in Herbal Drugs
PHY-PP-194	Nitin Sharma	Role of Herbal Remedies used in Hypertension- A Miracle of Nature
PHY-PP-195	Shabnam Banga	Gestational Diabetes Mellitus: Current Scenario
PHY-PP-197	Pranav Sharma	Role of Medicinal Plants in Treatment of Atherosclerosis
PHY-PP-200	Ritu Dhankar	Registration Procedures for Medicinal Products in US
PHY-PP-201	Jaswinder Kaur	Ethno, Botanical Phytochemical and Therapeutic Potentials of Pueraria Tuberosa (Wild.) Dc - A Well Known Aphrodisiac Drug
PHY-PP-202	Dalip Kumar	Gene Expression and Tissue Culture of Plant
PHY-PP-205	Risabet	Ayurvedic Formulations for Adjuvant to Chemo-and Radiotherapy of Cancer
PHY-PP-206	Vikas Gupta	Silymarin, Olibanum, A Mixed Herbal Formulation in the Treatment of Type 2 Diabetes: A Randomised, Double Blind, Placebo-Controlled, Clinical Trial
PHY-PP-207	Roqia Bashary	Identification of Possible Molecular Targets of Potential Anti-Alzheimer Drugs by Predicting Their Binding Affinities Using Molecular Docking Technique
PHY-PP-209	Parveen Kaur	Bone Marrow Transplantation Improves Survival Rate in Leukemia Patients: A Systematic Review
PHY-PP-210	Vinesh Dahiya	Microscopical Identification of some Fruits from Cucurbitaceae Family
PHY-PP-212	Isha Agrawal	Digitalis Purpurea (Scrophulariaceae): Herbal Treatment for Chronic Heart Failure
PHY-PP-213	Nikhil Kumar	Herbal Drugs as Powerful Remedies for Diabetes
PHY-PP-214	Jyoti Rathi	Role of Herbal Plants in the Treatment of Hypertension
PHY-PP-215	Neeraj	Preliminary Study of Anti-Oxidant Potential and Gas Chromatography-Mass Spectroscopy (Gc-Ms) Analysis of Brassica Oleracea
PHY-PP-216	Aman Jaswal	Natural Polyphenols Potential in the Prevention of Sexually Transmitted Viral Infections
PHY-PP-217	Neha Thakur	Optimization of Bio-fuel Production from Non-Traditional Bio-wastes
PHY-PP-222	Bilques Farooq	Comparison of DPPH and ABTS Assay for Determining the Antioxidant and Antibacterial Potential of five Varieties of Moringa Oleifera L.
PHY-PP-223	Sonia	Epilepsy: A Review of Reports and Models for Provision of Care for Patients with Epilepsy
PHY-PP-224	Srishti Chaudhary	Treatment of Rheumatoid Arthritis by Herbal Drugs and their Components
PHY-PP-225	Jatin	The Role of Phytomedicine in the Management of Asthma
PHY-PP-226	Ankush Sharma	Brivaracetam in Treatment of Patients with Epilepsy
PHY-PP-227	Suleima Muhamad Sani	Therapeutic use of Vasaka in the Treatment of Bronchial Asthma

PHY-PP-228	Sanjeev Kumar	Alcoholic Extract of Tulsi Leaves for Treatment of Breast Cancer
PHY-PP-231	Anupam Kumar	Comparative Analysis of Biochemical Composition, Antibacterial, Antifungal and Antioxidant Properties of Seed Extracts Derived from <i>Syzygium Cumini</i> and <i>Nigella Sativa</i>
PHY-PP-232	Nikhil Gupta	Green Tea Catechins as A Natural Antioxidants having Role in Prevention of gastrointestinal Tract Disorders
PHY-PP-233	Rohit Kumar	Advanced Wound Dressings from Natural Sources
PHY-PP-234	Preeti	Regulations on Pharmacovigilance of Medicinal Plant Products in India
PHY-PP-235	Pratibha Sharma	Micromorphology of Plants
PHY-PP-238	Mohit	A Review on Prevalence, Diagnosis, Pathogenesis and Treatment of Fatty Liver Disease and Obesity
PHY-PP-239	Sananda Som	Preliminary Screening of Preparation Techniques for Generation of Co-Crystals of Curcumin
PHY-PP-241	Nishant Mehta	Isolation and Therapeutic Role of Cannabinoids from <i>Cannabis Sativa</i> in Medicinal Plant Biotechnology
PHY-PP-242	Sourav Thakur	Design, Formulation and Pharmacokinetic Evaluation of Bilayer Tablet of Fexofenadine Hcl and Montelukast Sodium
PHY-PP-243	Karamdeep Singh	<i>Terminalia Bellirica</i> (Bahera): A Proficient Drug for Treatment of Heart Diseases
PHY-PP-245	Bushra Riyaz	Surface Engineered Carbon Nanotubes: An Emerging Horizon in Oncology
PHY-PP-246	Sandeep	Status on Clinical Trial Registration and Regulation of Traditional and Ayurvedic Medicines
PHY-PP-248	Bhagat Moukshit	Herbal Remedies for the Treatment of Tuberculosis
PHY-PP-249	Sonia Kumari	A Review on Phytochemical and Pharmacological Profiles of <i>Apamarga</i> ( <i>Achyranthes Aspera</i> )
PHY-PP-250	Dheeraj	Neutraceuticals: An Alternative to Pharmaceuticals
PHY-PP-251	Dhwani Roy	Cardiotoxicity of Anthracyclines
PHY-PP-252	Anjali	Health Benefits of Nutraceuticals for Preventing Cancer
PHY-PP-253	Jatin	Therapeutic Drug Monitoring
PHY-PP-254	Aarti Tiwari	Augmented Physicochemical Properties of Telmisartan by Cococrystallization with Citric Acid
PHY-PP-255	Manpreet Kaur	Mechanism of Zika Virus Induced Manifestations: Insights from Scientific Studies
PHY-PP-256	Amica	Medicinal Effects and Values of Herbal Drug <i>Vinca rosea</i>
PHY-PP-257	Monika Kaushik	Drug-Induced Liver Injury
PHY-PP-258	Sarbjit Kaur	Moringa - the Miracle Tree
PHY-PP-259	Deepika Ahlawat	Magnetic Targeted Drug Delivery System
PHY-PP-260	Sahil Wadhwa	Nanoemulsion as the Promising Targeted Drug Delivery System in Cancer Treatment
PHY-PP-261	Jashandeep Kaur	Novel Treatments for Methicillin Resistant <i>Staphylococcus aureus</i> (MRSA) Infection
PHY-PP-262	Diksha Jindal	Painless Future ahead with Needleless Injection
PHY-PP-263	Sanam Kumari	Patentiflorin A: Anti-HIV Compound
PHY-PP-266	Bajender Singh	Biomedical Potential of Mushrooms: An Update
PHY-PP-267	Sharib Khan	Role of Medicinal Plants in Indian Economy
PHY-PP-270	Bipandeep Kaur	Evaluation of the Effect of Vanillic Acid on Streptozotocin-Nicotinamide Induced Diabetic Neuropathy in Rats

PHY-PP-272	Nishant Thakur	Development of A New Apparatus for Bioadhesivity Evaluation with Sherington Rotary Drum
PHY-PP-273	Gurjit Kaur	Marine Algae as Potential Anticancer Agent
PHY-PP-274	Harjot Kaur	Medicinal Use of Terminalia Arjuna for Cardiovascular Disease-Cardiomyopathy
PHY-PP-275	Shubham Kumar	Aqueous Alcoholic Extract of Tinospora cardifolia Used in Healing of Diabetes and Pharmacokinetic Checked with Glibenclamide
PHY-PP-276	Ashustosh Gupta	Fast Dissolving Oral Strips: An Overview
PHY-PP-278	Rubiya Khursheed	An Insight on Role of Pharmaceutical Co-Crystals for Dissolution Rate Enhancement of Poorly Water-Soluble Drugs
PHY-PP-280	Vishu verma	Pharmaceutical Intervention of Rotenone through Novel Drug Delivery System to Decrease its Peripheral Toxicity in Rotenone Model of Parkinson Disease
PHY-PP-281	Ittishree	Scope of Herbal Drug Delivery Systems in Modern Era
PHY-PP-282	Priyanka Joshi	Evaluation of Croton tiglium Linn. on the Basis of Qualitative and Quantitative Parameters
PHY-PP-283	Rahul Verma	A Review on Cosmeceuticals and Herbal Cosmetics
PHY-PP-284	Tarun Gill	In-Sight to Therapeutic Potential of Herbal Drugs in the Treatment of Cancer
PHY-PP-285	Ahmad Makeen	Chromatographic Fingerprinting and Phytochemical Investigation of Ficusin fectoria Bark
PHY-PP-286	Akhilesh Gokhale	Impact of Blood Pressure and Pulse on 7 Days Outcome in Patients with Stemi
PHY-PP-287	Souvik Mohanta	Application of Spray Drying Technology for the Solidification of Apple Extract
PHY-PP-288	Axel Manzi	Neurotransmitters and Chemical Mediators of Inflammation: The Therapeutic Targets in Neuropathic Pain
PHY-PP-289	Ankush Sharma	Efficacy of Brivaracetam in Adult Epileptic Patients
PHY-PP-290	Divyani Verma	Development of Cosmeceutical Product from Nano-Sized Phytocompounds
PHY-PP-291	Irina Ghosh	Diabetic Ketoacidosis
PHY-PP-292	Ayush Kumar	Effect of Ginger and its Components in the Treatment of Gastrointestinal Cancer
PHY-PP-295	Manish Chaudhary	Glycogen Storage Disorder Type-1 Von Gierke's Disease
PHY-PP-297	Harpreet Kaur	Artemisinin: An Antimalarial Drug to Treat Cancer
PHY-PP-298	Arshbir Singh	Hypertension: the Silent Killer
PHY-PP-299	Jaspreet Kaur	Role of Herbal Remedies in the Management of Diabetes Mellitus: A Review
PHY-PP-300	Jivan Jyoti	An Overview of Role of Curcumin and Duloxetine Hydrochloride in the Treatment of Neuropathic Pain
PHY-PP-301	Juhi Kataria	Antidiabetic Effect of Hydro-Alcoholic Extract of Ficus microcarpa Leaves in Alloxan Induced Diabetic Rats
PHY-PP-302	Mohanbir Singh	Recent Trends in Herbal Medicines
PHY-PP-303	Pavas Sharma	Obesity and Hypertension: A Co-Relation and Cure by Medicinal Plants
PHY-PP-305	Amritpal Singh	Scope of Drug Discovery and Development through Ayurveda
PHY-PP-306	Prabal sharma	Opto-Genetics: A New Approach to Treat Tumorous Cells
PHY-PP-307	Raju Kumar	Role of Herbal Drugs in Peptic Ulcer: A Review
PHY-PP-308	Mosharof Hussain	ATP Synthase Inhibitor as Potential Biological Target

PHY-PP-309	Rajeshwar Verma	Nanotechnology: Future of Herbal Medicines
PHY-PP-310	Vibhu Yadav	Significance of Regulatory Guidelines for Marketing Authorization of Advanced Dressings: Indian Perspective
PHY-PP-312	Wazahat Anwar	Impact of Sumo-1 on Alzheimer's Disease Pathology and Related Diseases: Evidences from Animal Studies
PHY-PP-314	Subhajit Gain,	Extraction Methods of Natural Polymers used as Pharmaceutical Superdisintegrants
PHY-PP-315	Rahul Kumar	Various Tissue Dysfunctions Due to Diabetes Mellitus: An Overview
PHY-PP-317	Neha Heer	Need of ADR Monitoring of Herbal Medicines in Modern Era
PHY-PP-318	Palak Anand	Bioenhancers - A Boon for Pharmaceutical Industry in the Commercialization
PHY-PP-322	Bijay Kumar Yadav	Garlic (Allicin) from Spice to Medicine: An Overview
PHY-PP-323	Shubham Bhardwaj	Natural Bio-Enhancer; Need of Hour
PHY-PP-324	Kulvir Singh	Anticancer Activity of Garlic (Allium Sativum)
PHY-PP-325	Gursharanjit singh	Antidiabetic effect of Ginger
PHY-PP-327	Gurmandeep Kaur	An Overview: Phytosomes as an Advanced Herbal Drug Delivery System
PHY-PP-328	Harish babbar	An Overview of Medical Applications of Ocimum Sanctum
PHY-PP-329	Harmeet Kaur	Nutraceutical Properties of Food
PHY-PP-330	Mule Himraja	Terminalia chebula: A Potent Phytochemical Compound for The Treatment of Diabetes Mellitus
PHY-PP-331	Ayinkamiye Clarisse	Nanoparticles Based Herbal Nutraceuticals for Treatment of Cancer
PHY-PP-332	Shyam Bass	Pharmacogenomics: A Boon or Boom in The Development of Personalized Medicines
PHY-PP-333	Yogita Kumari	An Overview of Green Synthesis of Gold Nanoparticles Using Eclipta Alba Leaves
PHY-PP-334	Luqman Ibni Yaseen	Traditional Knowledge Digital Library
PHY-PP-335	Rahul Verma	Herbal Cosmetics and Cosmeceuticals
PHY-PP-336	Bashir Usman	Potential Role of Carica Papaya Leaf Extract in Treatment of Dengue Infection
PHY-PP-337	Zakir Hussain	Recent Advancement in the Development of Advanced Self- Diagnostic Device
PHY-PP-338	Madhu Verma	Paracetamol (Acetaminophen) Poisoning
PHY-PP-339	Narendra Kumar Pandey	Method Development for Simultaneous Estimation of Glimepiride and Simvastatin by Using Reversed-Phase High-Performance Liquid Chromatography
PHY-PP-340	Suprava Shah	Molecular Structural Requirements for Dual Inhibition of MDM2 And MDM4 for The Discovery of Novel Anticancer Agents
PHY-PP-343	Bimlesh Kumar	Animal Models of Neuropathic Pain: A Mirror of Human Response to Nerve Injury
PHY-PP-344	Sakshi Panchal	Traditional Indian Medicinal Plants and Its Isolated Components as an Alternative Therapy for The Management of Diabetic Neuropathy
PHY-PP-345	Shubham Kumar Sinha	Development of Oral Colon Targeted Delivery System of Sulfasalazine in The Combination with Curcumin for The Treatment of Colonic Ulcer
PHY-PP-346	Mayukh Banerjee	Development of Analytical Method for Simultaneous Estimation of Sulfasalazine and Curcumin Using Uv-Visible Spectrophotometer
PHY-PP-347	Rupinder Kaur	Medical Applications of Capsicum: An Overview
PHY-PP-348	Jayprakash Gupta	A Review: Cannabis and Its Advantages in Medicinal Field
PHY-PP-349	Tashi Tenzin	A Review Based on Anti-Diabetic Potential of Moringa Oleifera

PHY-PP-350	Rahul Prasher	Cigarette Butts: An Environmental Burden and Its Unique Solution
PHY-PP-352	Arvinder Kaur	Malaria and Artemisinin: An Update
PHY-PP-353	Pratikshit Thakur	Development of Organs for Transplantation by Using Stem Cells: A Dream to Reality
PHY-PP-354	Sathya Priya L.S,	Design and Development of Novel Dry Powder Inhaler Device
PHY-PP-355	Prakhar Bhadauriya	Antifertility Activity of Butea Monosperma Lam and Its Phytoconstituents
PHY-PP-356	Parvarish Sharma	Alzheimer's Disease: Prevention, Early Diagnosis and Herbal Therapy for Treatment
PHY-PP-357	Sahil Chechi	Traditional Herbal Medicines for Neuropathic Pain in Diseases
PHY-PP-358	Abhijit Nijjar	Herbosomes As Novel Drug Delivery Systems: A Review
PHY-PP-360	Saumya Darshna Shikha	Kola Nut: An Effective CNS Stimulant and Therapeutic Agent
PHY-PP-361	Takdeer Singh	Anticancer Potential of Abrus Precatorius L and Its Constituents
PHY-PP-362	Ravi Kumar	Preparation and Stabilization of Curcumin Nanosuspension: An Overview
PHY-PP-363	Diksha Mankotia	Role of Desmodium gangeticum in the Treatment of Rheumatoid Arthritis: An Overview
PHY-PP-364	Ranit Das	Identification of Molecular Targets of Potential Anti-Diabetic Drugs by Using Pass and Molecular Docking
PHY-PP-365	Heena Khatun	A Review on Aegle Marmelos: A Plant with Potential Medicinal Activities
PHY-PP-366	Rajan Kumar	Pharmacological Evaluation of Hesperidin in Reserpine-Induced Rat Model of Parkinson's Disease
PHY-PP-367	N Vishwanadh	Extraction, Isolation and Standardization of Gingerol by TLC, HPLC from Ginger Rhizome and The Study of Anti-Inflammatory Activity for the treatment of Arthritis and Migraine
PHY-PP-368	Nitin Kumar Bhatt	Chemometrics: A Novel Approach for Herbal Drug Standardization
PHY-PP-369	Rakshit Kestwal	Proniosomes: Advancement and Challenges
PHY-PP-370	Aaditee Sharma	Depression in Youth: An Update to Understanding
PHY-PP-374	Rishabh Sharma	Scope of Anti-Aging Therapies
PHY-PP-376	Arlner Mathai	Neurological Impacts of Alcoholics
PHY-PP-377	Gaurav Sharma	Production of Sophisticated Asset and Its Effect Upon the Plant Growth Under Viral Transmission into The Host Cell
PHY-PP-378	Jyoti	Nanotechnology: A New Approach in Herbal Medicine
PHY-PP-380	Neha Nupur	Epilepsy: A Neurological Threat: Who Initiative
PHY-PP-382	Prakrati Garg	Potential Biological Efficacy of Pinus Plant Species Against Oxidative, Inflammatory and Microbial Disorders
PHY-PP-383	Sudhir Kumar	Phytosomal Technique: Revealing Journey of Phytopharmaceuticals
PHY-PP-384	Naveen Chandra Pant	Cuo Nanoparticle Mediated Elicitation of Phytochemicals in Chicory (Cichorium Intybus L.)
PHY-PP-385	Raji	Plant Constituents Used in Treatment of Neuropathic Pain
PHY-PP-386	Neeta	Effects of Cross Linking Agent on Boswellic Acids Loaded Chitosan Nanoparticles
PHY-PP-387	D. S. Gaikwad	Effects of Phyto additives on Carcass Characteristics and Blood Profile of Broiler
PHY-PP-388	Meenu	Natural Products: A Viable Source of Novel Drug Leads
PHY-PP-390	Anuja Verma	Exploring Potential of Herbal Drugs in Treatment of Heart Stroke
PHY-PP-391	Manvi Sharma	Case Study of an Autistic Boy with Dream of Living a Normal Life- Birth to 14 years Follow up
PHY-PP-392	Arvinsingh Sahadey	Pharmacological Effects of Cannabidiol: An Important Phytoconstituent

PHY-PP-394	Arpita Roy	ROLE OF ACTIVATED CHARCOAL AND ELICITORS ON ROOT INDUCTION OF MEDICINALLY IMPORTANT PLANT: PLUMBAGO ZEYLANICA
PHY-PP-395	Kiran	The Genus Pyrus - An Update
PHY-PP-396	Shivam Goutam	Trends in Ageing and Skin Care: Nutricosmetics and Neurocosmetics
PHY-PP-399	Chetan Thakur	Basal cell carcinoma: Targeting sonic hedgehog pathway
PHY-PP-400	Indu Kainth	Current status and treatment for Epilepsy

**PHY-PP-101****Production of Dextran from Dextransucrase Producing *Leuconostoc* Sp. and its Application in Formation of Dextran Coated Iron-oxide Nanoparticles****Sukhminderjit Kaur**Chandigarh University, Chandigarh, India-140413  
sukhminderbiotech.cu@gmail.com

Dextrans are water-soluble polymers that have gained an industrial importance over the past few years. The *Leuconostoc* sp. converts sucrose into dextran with the help of dextransucrase. The study was planned to isolate dextransucrase producing bacteria from fruits, vegetables and soil samples. Thirty samples of vegetables, fruits and soil were processed for the isolation of dextransucrase producing microbes *viz.* *Leuconostoc* species. Using sucrose agar, the isolates were then characterized morphologically as well as biochemically. All isolates were screened for dextransucrase production by studying parameters such as bacterial growth, protein content and enzyme activity. The isolate showing highest enzyme activity was used for dextransucrase production. Production of dextran was done from free and immobilized dextransucrase. The dextran, thus, produced was used for the formation of dextran coated iron oxide nanoparticles. All the isolates were Gram +ve and were found to belong to *Leuconostoc* sp. Maximum dextransucrase production was observed at temperature 25°C, pH 7.5 and sucrose concentration of 10%. The optimum time for incubation between enzyme and sucrose was found to be 80 min. The yield of dextran from immobilized enzyme was higher than free cells. This dextran was then used to produce dextran coated iron oxide nanoparticles. The yield of nanoparticle synthesis was 71.5 g and dextran content was 10.5 g. Magnetic iron oxide nanoparticles (MION) are the subject of many current research in particular because of their possible applications in several areas such as biomedical applications and diagnostics.

**PHY-PP-102****Turmeric: A Review on Ethnomedicinal uses, Phytochemistry and Pharmacological Aspects****Neha Sharma**School of Pharmacy, Lingaya's Vidyapeeth, Faridabad, Haryana, India-121002  
nehasharma976@yahoo.com

*Curcuma longa* (Turmeric) commonly known as Haldi belonging to family *Zingiberaceae*, is a perennial herbaceous plant that reaches up to 1 m (3 ft 3 in) tall. It is native to the Indian subcontinent and Southeast Asia. It requires temperature between 20 and 30 °C (68–86 °F) and a considerable amount of annual rainfall to thrive. It is a major part of Ayurveda, Siddha medicine, Unani, and traditional Chinese medicine. Traditionally, rhizome of turmeric has been used as a flavoring agent in many cuisines, as colouring agent especially for ointments and creams and as medicine, is used as an attempted treatment for a variety of disorders such as anorexia, as blood purifier, body pains, common cough and cold, diabetes wounds, flatulence, haemorrhage hematuria, indigestion, jaundice, liver ailments, menstrual difficulties, throat and skin infections, as well as topically, to cleanse wounds or treat skin sores and is given to cattles to treat the loose stool. Turmeric has been found to be a rich source of phenolic compounds i.e. curcuminoids. These curcuminoids contain three different diarylheptanoids such as curcumin (diferuloylmethane), demethoxycurcumin (hydroxylferuloylmethane) and bisdemethoxycurcumin (di-hydroxycinnamoylmethane) and various volatile oils, including tumerone, atlantone, and zingiberone. But chief constituent Curcumin is responsible for various pharmacological activities including anti-oxidant, anti-neoplastic, anti-viral, anti-inflammatory, anti-bacterial, anti-fungal, anti-diabetic, anti-coagulant, anti-fertility, anti-asthmatic, anti-dermatophytic chemoprotective cardiovascular protective, hepatoprotective, hypolipidemic, neuroprotective activity and immunostimulant activities in animals. Various formulaions of *C. longa* are available in market for various diseases. Hence, this review focuses on the ethnomedicinal uses and pharmacological benefits of turmeric in prevention and treatment of various diseases.

***PHY-PP-103*****Abuse Deterrent Technology****Suchitra**

College of Pharmacy, Pt.B.D.Sharma University of Health Sciences, Rohtak, Haryana, India-124001

suchitranishal50@gmail.com

Abuse described as the nonmedical use of a drug, repeatedly or even sporadically, for the positive psychoactive effects it produces, while abuse-deterrent properties are defined as those properties shown to meaningfully deter abuse, even if they do not fully prevent abuse. Abuse is not similar to misuse, the latter refers to the intentional therapeutic use of a drug product in an inappropriate way. The development of an abuse-deterrent opioid product should be guided by the need to reduce the abuse known or expected to occur with similar products. Abuse deterrent formulations can be classified on the basis of basic techniques such as Physical/chemical barriers, Agonist/antagonist combinations, Aversion, Delivery System, New molecular entities and prodrugs, Combination. Creating abuse-deterrent opioid formulations may be an important step in combating opioid abuse. This technique can be exemplified by Remoxy, Acuracet, Oxy Contin and Exalgo etc.

**PHY-PP-105****Nanotechnology: A New Approach in Herbal Medicine****Jyoti, Rakesh Kumar Marwaha**Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana,  
India-124001

jyotidahiya072@gmail.com

Herbal derivatives are of great research interest owing to their wide applications in therapeutics. Employing these herbal compounds for synthesizing nanoparticles for biomedical applications have been ventured in recent times due to their fewer side effects. The integration of the nano-science as a novel drug delivery system (NDDS) in traditional systems of medicine enriches the potential of herbal drugs for treating chronic diseases such as cancer and ravaging diseases. The use of nanotechnology for “phytotherapy” or treatment of various diseases by herbal medicines/drugs, including herbal drug delivery where current and emerging nanotechnologies could enable entirely novel classes of therapeutics. Various NDDS such as liposomes, ethosomes, nanoparticle, pronisomes, floating drug delivery system, microemulsions have been reported for delivery of herbal drugs. The combination of herbal medicines with nanotechnology might be able to potentiate the action of plant extracts, improve the bioavailability, reduce the required dose and side effects. Overall, this presentation reveals that nanotechnology has great potential for delivering herbal drugs for various classes of diseases and its future impact on smart herbal drugs. NDDS is designed to overcome the drawbacks of the traditional herbal drug system due to its wide applications to mankind. Nano-sized drug delivery systems of herbal drugs have a potential future for enhancing the activity and overcoming problems associated with pure herbal drugs.



***PHY-PP-106***

### **Transdermal Drug Delivery System: An Emerging Novel Drug Delivery System**

**Kavita Sapra**

College of Pharmacy, Pandit Bhagwat Dayal Sharma University of Health Science, Rohtak, Haryana, India-124001

kavitasapra16@gmail.com

With oral administration of drugs, variances in absorption and metabolism rates are a consequential factor and there is risk of potential side effects. By medicating through the skin, a more even and continuous dosage of medication may be administered over a longer period of time. Further, such treatment provides more immediate, as well as more physically and psychologically rewarding, relief, as it may be applied directly to site of the action. Thirdly, transdermal drug delivery system is painless drug delivery system with reduced side effects easy application and flexibility of terminating drug administration by simply removing the patch to the skin. In this presentation, we focus on the selection and design criteria of drug for transdermal drug delivery and also summarize pathways of drug penetration, skin permeability kinetics, basic components of TDDS, advantages of TDDS, drug vehicle interactions and methods of drug delivery.

***PHY-PP-107*****Potential Role of Medicinal Plants in Anticancer Treatment****Urvashi Saini, Virender Kumar, Davinder Kumar**

College of Pharmacy, Pandit Bhagwat Dayal Sharma Postgraduate Institute of Medical Sciences, University of Health Sciences, Rohtak, Haryana, India-124001  
urvashi1294@gmail.com

Cancer is a disease which harshly effects the human population. There is an unvarying demand for new therapies to treat and prevent this life-threatening disease. The Plant Kingdom produces naturally occurring secondary metabolites which are being investigated for their anticancer activities leading to the development of new clinical drugs. Plant-based compounds can help to treat or prevent cancer through affecting the involved factors. The main purpose of this review article is to investigate and introduce medicinal plants and their potential anticancer properties. Plant-based active compounds, including phenols, flavonoids, and antioxidants, can be effective on tumor predisposing factors and hence may prove to be useful in preventing this disease and associated harmful complications. The aim of this study was to investigate the effective medicinal plants in the treatment of cancer and study their mechanism of action. The most effective mechanisms of herbal plants is to inhibit cell cycle and proliferation. Common treatments such as radiotherapy and chemotherapy can cause some complications. For the prevention and treatment of cancer, herbal medicines have played an important role. Countless anticancer plants have been recognized with the help of innovative techniques including isolation and structure elucidation that implement their beneficial effect by increasing immunity of the body, inducing antioxidant action, endorsing making of shielding enzymes, hindering cancer triggering enzymes and hormones, and exciting DNA restoration mechanism.



***PHY-PP-108***

### **Microemulsion and Nanoparticles as A Drug Delivery System**

**Virender Kumar**

Department of Pharmaceutical Sciences, M.D. University, Rohtak, Haryana, India-124001  
sachdeva.virender5@gmail.com

Microemulsions are nano-sized emulsions, which are manufactured for improving the delivery of active pharmaceutical ingredients. These are the thermodynamically stable isotropic system in which two immiscible liquids are mixed to form a single phase by means of an emulsifying agent, i.e., surfactant and co-surfactant. The droplet size of microemulsion falls typically in the range 20–200 nm. Similarly, a particles having diameter in range between 10-100 nm are known as Nanoparticles. They are mostly used as targeted delivery system for delivery of small and large molecules by changing their pharmacodynamics and pharmacokinetic properties. They can be defined as system which contain active ingredient as dissolved, encapsulated or adsorbed in matrix material which are used as target delivery system. In the present work, attention is focused to give the brief information about formulation aspect, method of preparation, characterization techniques, evaluation parameters and applications of the microemulsion and nanoparticles.

**PHY-PP-109****Pharmacological Significance of Synthetic Peptide Conjugates of Heterocyclic Scaffold****Ramninder Kaur, Anju Goyal, Sandeep Arora**

G.H.G Khalsa College of Pharmacy, Gurusar Sadhar, Ludhiana, Punjab, India-141104

Chitkara College of Pharmacy, Rajpura, Punjab, India-140401

ramninder@gmail.com

Heterocyclic compounds form a major class of organic compounds. An enormous number of heterocyclic compounds are known today and this number is increasing rapidly due to their synthetic utility. Heterocyclics are inextricably woven into the life processes. The vital interest of the pharmaceutical and agrochemical industries in heterocyclics is often connected with their natural occurrence. Heterocyclic compounds played a vital role in the metabolism of all living cells. All the available natural and synthetic heterocyclic compounds can and do participate in biochemical reactions in the human body. Synthetic chemistry provides cornucopia of heterocyclic systems. More than 90% of new drugs contain heterocyclic and the interface between chemistry and biology, at which so much new scientific insight, discovery and application is taking place is crossed by heterocyclic compounds. Heterocyclic compounds dominate the field of biochemistry, medicinal chemistry, dyestuff, agricultural sciences and are of increasing importance in many other areas including polymers, adhesives and molecular engineering. The heterocyclic ring comprises of very core of the active moiety or the pharmacophore. There is always a strong need for new and efficient processes in synthesizing of new heterocyclics. Heterocyclic moieties like phenoxy acetic acid, thiadiazole, oxazoles, isoxazole, oxadiazole, imidazole, benzimidazole, thiazoles, triazole, benzoxazole, benzothiazole and other compounds containing one or more of these heterocyclic rings or their derivatives bring a lot of attention in the last two decades, because of their wide pharmaceutical and non pharmaceutical uses. Peptides are recognized for being highly selective and efficacious and at the same time, relatively safe and well tolerated. Condensation of heterocyclic moieties with amino acids and peptides resulted in compounds with potent biological activities. This review article covers the most active heterocyclic compounds with peptide conjugates that have shown substantial biological actions as antifungal, anti-inflammatory, antibacterial, antidepressant, antiulcer, antihelminthic and anticancer activity.

**PHY-PP-111****Role of Biofilms and Their Inhibitors in Chronic Microbial Infections**

**Jessica Oppong Mensah, Rakesh Narang, Gopal Lal Khatik, Surendra Kumar Nayak, Sachin Kumar Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144401

joppmens@gmail.com

Many studies have shown that gradual rise in resistance of the microbes to antibiotics *viz*  $\beta$ -lactams, aminoglycosides and phenicol drugs like chloramphenicol *etc.* is a serious global concern. Due to resistance, the treatment of common infections is becoming difficult. Resistant microbes could spread the infections among a wide population, which could possibly lead to an occurrence of an endemic. Resistant microbes cultivate through a lot of mechanisms including enzymatic resistance and efflux pump mechanism, but the most prevalent of keen interest is the alteration in the permeability of the drug by the formation of biofilms. Biofilm is an association of densely packed microbial cells, attach itself to living and non-living surfaces irreversibly to grow within a slimy matrix made up of extracellular polymeric substances (EPS). These EPS are made up of polysaccharides, proteins and DNA. The formation of biofilms starts with the attachment of a single bacteria to a surface *via* Van der Waal forces as a planktonic cell and after a period of time, get permanently attached by forming cell adhesion structures such as pili. The biofilm formation results in changes in the genetic characteristics of the microbes including growth rate and gene transcription. This leads to more infectious nature of microbes, as they are able to withstand harsh conditions and the body's immune system, making them a real threat to the health sector. According to research works by the National Institutes of Health (NIH), it was also found that about 65% of microbial infections and 80% of chronic infections are associated with biofilms and most of these infections are nosocomial infections. Present work tends to gain more in-depth knowledge about biofilms as well as biofilm inhibitors which would have a positive impact in the human health by destroying the biofilms present *in vivo*.

**PHY-PP-113****Commercialisation of Processed Crude Drug of Medicinal Importance:  
Lab Techniques to Trade****Garvita Narang, Virender Kumar**Colege of Pharmacy. Pt. Bhagwat Dayal Sharma University of Health Sciences, Rohtak,  
haryana, India-124001

garvitanarang8859@gmail.com

In the current research, medicinal importance of a processed crude drug was formulated. Medicinal importance means to extract that constituent from crude drug which is of therapeutical importance and plants have been the basis of many traditional medicine systems throughout the world for thousands of years and continue to provide mankind with new remedies. Crude drug refers to the natural product that has not been advanced in value or improved in condition by any process. Processing of crude drug includes the study of indigenous source, history, cultivation technology, macroscopical or morphological description, microscopical study, utility, pharmacological action and related chemical reactions, etc. Medicinal plants, since times immemorial, have been used in virtually all cultures as a source of medicine. Interest in medicinal plants as a re-emerging health aid have been fuelled by the rising costs of prescription drugs in the maintenance of personal health and well being. Drug discovery from plants involves a multi disciplinary approach combining botanical, ethnobotanical, phytochemical, and biological techniques. Commercialization and product development is the supply chain management process that provides structure for developing and bringing to market new products jointly with customers and suppliers. Prior to packaging, a product passed through proper authentication test. Proper packaging is necessary to prevent it from deterioration.

**PHY-PP-114****Marine Products Based Drug Discoveries****Nisha Sansanwal, Virender Kumar, Davinder Kumar**

College of Pharmacy, Pandit Bhagwat Dayal Sharma Postgraduate Institute of Medical Sciences, University of Health Sciences, Rohtak, Haryana, India-124001  
nishi060995@gmail.com

Natural products and their derivatives account for about half of the New Chemical Entities (NCEs) for drug discovery to treat human diseases. Marine natural products have contributed eight cosmeceuticals that were approved by the US Food and drugs Administration and European medicines Agency. A number of metabolites related to marine fungi have been discovered from various sources which are known to possess a range of activities such as antibacterial, antiviral and anticancer agents. Many marine natural products (MNPs)- for example, neochinulin-B have been found to be promising drug candidate to alleviate the mortality and morbidity rates caused by drug resistant infections. In present work we highlight physiochemical properties of the reported natural products that have bioactivity against drug resistant pathogen in order to assess their drug potential. Marine invertebrates' (*i.e.* sponges, corals) as a source of new chemicals entities are the center of research for several scientific groups and wide spectrum of biological activities encourages scientists to carry out investigation on marine products. In this talk, drug discoveries based on marine natural products will be discussed.

***PHY-PP-115*****Artificial Sweetener and the Obesity Epidemic****Parmita Phaugat**

Assistant Professor College of Pharmacy, Pt. B.D.Sharma University of Health Sciences  
Rohtak, Haryana, India-124001  
parmeeta.phougat@gmail.com

Obesity epidemic helps to curtail small dietary changes that prevent weight gain in children and adolescent. Nowadays, artificial sweetener has gained importance as dietary tool in weight loss programme. Patient with diabetes have difficulty in regulating blood sugar level. Low calorie sugar sweetener approved by FDA offer patient with diabetes broader food choices. Presently, there is no strong clinical evidences for causality and metabolic health effects due to use of artificial sweetener. Multiple behavioural mechanisms have been proposed to account for the epidemiologic association between artificial sweetener use and weight gain. Natural sweeteners lead to the dissociation of the sensation of sweet taste from caloric intake may promote appetite, leading to greater food consumption and weight gain.



**PHY-PP-116**

### **Recent Development in Floating Drug Delivery System**

**Beena Kumari**

Department of Pharmaceutical Education and Research, Bhagat Phool Singh Mahila Vishwavidyalaya, South campus, Bhainswal Kalan, Sonapat, Haryana, India-131409  
beenasangwan051119993@gmail.com

In the gastroretentive drug delivery systems (GRDDS), the dosage form after oral administration retained in the stomach and releases the drug there in a controlled and prolonged manner, so that the drug could be supplied continuously to its absorption sites in the upper gastrointestinal tract. In the gastric region, gastroretentive dosage form can remain for several hours and prolong the gastric residence time of drugs significantly. While, the bulk density in floating drug delivery systems (FDSS) is more than the gastric fluids and therefore, they remain buoyant in the stomach for a long-time period without affecting gastric emptying rate. When the system is floating on the gastric fluid; the drug releases slowly. This results in an increased gastric residence time and a good control on the rise and fall in plasma drug concentration. For local action in the upper part of the small intestine, i.e., treatment of peptic ulcer disease, longer residence time in the stomach could be advantageous. Moreover, drugs that are absorbed readily upon release in the GI tract, improved bioavailability is expected by slow release in the stomach. By the simultaneous administration of pharmacological agents, the controlled gastric retention of solid dosage forms may be achieved that delay the gastric emptying or it may be achieved by the mechanisms of sedimentation, flotation, muco-adhesion, expansion, modified shape systems. The main purpose of this paper is to review the concept of gastroretentive drug delivery systems with the recent literature and current technology used in the development of this system.

**PHY-PP-117****Review on Developments and Antimicrobial Activities of 2,4 Thiazolidinedione Derivatives****Navjot Singh Sethi, D.P. Bhagwat, Pankaj Bhateja**

School of Pharmacy, Maharaja Agrasen University, Kalujhanda, Solan, Himachal Pradesh, India-174103

sethinavjot17@yahoo.com

2,4-thiazolidinedione is a five-membered heterocyclic ring containing sulphur, nitrogen and carbon as the members of the ring system while possessing two ketonic groups as the substituents. In last two decades 2,4-thiazolidinedione was used as antidiabetics while nowadays a variety of research papers have shown that 2,4-thiazolidinedione is also possessing antimicrobial activity. As 2,4-thiazolidinedione has nitrogen as the member of the heterocyclic ring, same to beta lactam ring of penicillins, alkaloids and other antimicrobial agents, it can be proposed that this ring must have the antimicrobial activity. This specific activity diverts many researchers to 2,4-thiazolidinedione which can be the key to the problems of resistance of old antimicrobials. In the present review recent updates in syntheses and antimicrobial activity of 2,4-thiazolidinedione are discussed. This article will help in the development and SAR studies of new derivatives of 2,4-thiazolidinedione. The aim of this article is to review the research reported on antimicrobial activity of 2,4-thiazolidinedione between 2005 to 2018.

**PHY-PP-118****High Performance Thin Layer Chromatography Profiling for Different Samples of *Haridra* Based on Marker Compound (Curcumin) Using Principle of Snyder Triangle Solvent System for Chromatography****Azad Singh**Gujrat Ayurved University, Jamnagar, Gujarat, India-361008  
azadaswal@gmail.com

HPTLC (High Performance Thin Layer Chromatography) is the most beneficial tool for herbal fingerprinting in today's Era. It is most sophisticated and highly precise for the results. This is based on the principle of TLC (Thin layer chromatography). It is a higher version of TLC. It is very suitable instrument for the herbal standardisation with the help of its marker compound we can easily identify the compound present in plant and quantity is also measured with the help of quantitative analysis. Basically, the important process in HPTLC is preparation of samples, loading the samples through semi-automatic sample applicator and at last scanner will help us to read the samples in multi wavelengths. *Haridra* is a well-known herbal drug used in world wide. It is yellow colour spice available easily in Asian market. It is highly used in various treatments its anti-inflammatory property makes it more useful. Curcumin is marker compound present highly in this drug. It is yellow colour crystalline compound which is easily isolated by acetone. In present study the Snyder triangle is used for the study to enrichment of this marker compound from *haridra*. Snyder gave the concept of the solvent system in which he divided the chemicals in seven groups on the basis of proton acceptor and proton donor and dipole. He made a triangle shape chart which is easily available in *Essence of Chromatography* book. On the basis of the solvent strength all the solvent systems are designed. first solvent system is methanol and water and second is methanol and acetone and third is diethyl ether and toluene and fourth is Propan-1-ol and toluene. In this the extract is obtained by kept *haridra* coarse powder in twenty-four hours in these systems and then filtration is done and then with help of glass crucible the filtrate is boiled in water bath and then extracts are collected and then HPTLC profiling is done. The result shows that curcumin is easily extracted in non-polar solvent group then polar solvent.

**PHY-PP-119****Thiazolidin-2,4-Dione as Potent Antimicrobial and Anticancer Agent: A Review****Harsh Kumar, Rakesh Kumar Marwaha**Department of Pharmaceutical Sciences, MDU, Rohtak, Haryana, India-124001  
goyalpharma86@gmail.com

Thiazolidine-2,4-diones (TZDs) serve as a promising scaffold because of their prominent position in medicinal chemistry. Thiazolidine-2,4-diones serving as a unit are responsible for numerous pharmacological and biological importance. Literature report reveals that TZDs derivatives are reported to be a component in a number of useful drugs and are associated with many biological and therapeutical activities such as antibacterial, anticancer, antifungal, antidiabetic, anti-inflammatory and antimycobacterial. The treatment of infectious diseases still remains a significant and thought-provoking problem because of a combination of factors including increasing number of multi-drug resistant microbial pathogens and developing infectious diseases. Recently, it was reported that imidazole group at 5th position of TZD nucleus improved the antimicrobial activity of thiazolidin-2,4-dione derivative [I] (MIC= 0.56 µg/ml against *P. aeruginosa*) (Moorthy et al., 2014). Phenyl acetamide moiety with methyl substitution at 3rd position of thiazolidin-2,4-dione showed antimicrobial activity of thiazolidin-2,4-dione analogue [III] (MIC= 20 µg/ml against *S. aureus*). Malik et al. identified that m-hydroxyl or p-methoxy benzylidene directly attached to 5th position of thiazolidin-2,4-dione ring caused the enhancement in the antimicrobial activity of thiazolidin-2,4-dione nucleus [II] (Zone of inhibition = 11 mm). Anticancer agents showed their biological potential usually by targeting various intracellular receptors; therefore, present study mainly focuses on cell proliferation as therapeutic targets. Further it was reported that substitution at 5th position of thiazolidine-2,4-dione with 4-(cyclohexylethoxy)phenyl analogue possessed 24-fold activity than standard ( $K_i = 0.09 \pm 0.01 \mu\text{M}$ ) against 15-hydroxyprostaglandin dehydrogenase (15-PGDH) inhibitors.

**PHY-PP-120****Oxadiazoles as Anticancer Agents****Ashu Sapra**Department of Pharmaceutical Sciences, M.D University Rohtak, Haryana, India-124001  
ashusapra7@ gmail.com

Five member heterocyclic 1,3,4-oxadiazole nucleus find inimitable place in medicinal chemistry and plays important role in producing anticancer activity. The small and simple 1,3,4-oxadiazole nucleus is present in various compounds involved in research aimed at evaluating new products that possess remarkable pharmacological properties such as antitumor activity. Mono and 2,5-di-substituted-1,3,4-oxadiazole derivatives have attracted considerable attention owing to their effective biological activity and extensive use. Some examples of compounds containing the 1,3,4-oxadiazole unit currently used in clinical medicine are: Zibotentan as an anticancer agent. The important mechanism involved during its tumour suppression is related with the inhibition of different growth factors, enzymes and kinases including telomerase enzyme, histone deacetylase (HDAC), thymidylate synthase (TS), glycogen synthase kinase-3 (GSK), epidermal growth factor (EGF), vascular endothelial growth factor (VEGF) etc. Here we reported 1, 3, 4-Oxadiazoles as anticancer agents.

**PHY-PP-121****Importance and Necessity of Healing Herbs in Today's Life****Digvijay Singh, Vikas Mehta**

Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India- 124001

Digvijaysingh1120@gmail.com

The study is centered around healing herbs like *Allium sativum*, *Zingiber officinale*, *Cinnamomum zeylanicum*, *Curcuma longa* and *Piper nigrum*. Healing and medicinal plants both are as old as mankind itself. Healing herbs is a preventive approach due to our current lifestyle. One can avoid use of drugs to a greater extent by using healing herbs. But the individual must know how to use the herb as being natural they cannot be considered safe or they will not show any side effect. Proper use is necessary to get desired result. Herbs should be used in whole form as isolated ingredient can cause harmful effect. *Curcuma longa* if given in combination with *Piper nigrum* it will increase the bioavailability of turmeric thus the action will increase. *Curcuma longa* is the preferred herb of Ayurvedic and Chinese medicines and its rich golden color is due to curcumin. Healing herbs are mostly used to treat disorders like alzheimer, anxiety, insomnia and stress. These are the most common and dangerous disorder in modern time. As most of the population are suffering from such disorder and the synthetic drugs can give only symptomatic relief and are not safe as well. But healing herbs can reduce or cure such disorder to a greater extent.

**PHY-PP-122*****In Vitro* Antibacterial and Antioxidant Activity of Essential Oil from the Aerial Parts of *Agrimonia Aitchisonii* Schonbeck Temesy****Pawan Kumar, Mohammad S. Javed**Department of Chemistry, Kumaun University, Nainital, Uttarakhand, India-263002  
manhas804@gmail.com

The essential oil from the aerial parts of *Agrimonia aitchisonii* Schonbeck Temesy, growing in the Himalayan region is evaluated for its antibacterial and antioxidant activity. The antibacterial effect of the essential oil was evaluated against both Gram-negative bacteria and Gram-positive bacteria. The zone of inhibition (ZOI) for the test bacterial strains at a concentration of 500 µg/ml against Gram-negative bacteria *Pseudomonas aeruginosa* 424 (7 mm), *Escherichia coli* 443 (4 mm), *Aeromonas hydrophila* 646 (8 mm) and Gram-positive bacteria *Bacillus subtilis* 441 (4 mm) and *Staphylococcus aureus* 737 (6 mm) were evaluated. The oil has shown  $435.7 \pm 0.004$  mg/ml gallic acid equivalent per 100 mg of the oil as total phenolic content and  $423 \pm 0.003$  mg/ml quercetin equivalent per 100 mg of the oil as total flavonoid content. The VEAC values were found to be  $0.454 \pm 0.003$  g/L and  $0.538 \pm 0.001$  g/L for the essential oil and ascorbic acid, respectively.

**PHY-PP-124****Effect of Compression Force on Tablet Properties Prepared from Mixture of Avicel and Ac-Di-Sol****Monika, Jasbir Singh**

College of Pharmacy, Pt. B D Sharma University of Health Sciences, Rohtak, Haryana, India-124001

monikadahiya359@gmail.com

Aim of the present report was to study the disintegration and dissolution properties of the tablets as a function of compression force. The increase in dissolution time with force was attributed to manner in which tablets disintegrated while dissolving. Tablets were prepared using Avicel (60%) and Ac-Di-Sol (40%) as common excipients for tablets with the help of 16 station rotatory tablet machine with fixed press settings (compression cycle) like; RPM, dwell time, die filling. A linear relation between dissolution efficiency and the log of force was found to exist over the compression range studied. Tablets from the same compression cycle showed variations in their dissolution profile, which were in agreement with observed effects of compression force on dissolution.



**PHY-PP-125**

**Biological Potential of Furan Derivatives in New Era: A Review**

**Dharmvir Singh, Sanjiv Kumar, Balasubramanian Narasimhan**

Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India- 124001

panchal.shilu1994@gmail.com

Heterocyclic compound used in various religious, cultural and medicinal applications. This created interest among researchers who have synthesized variety of heterocyclic derivatives and screened them for their various biological activities. Furan is five membered heterocyclic ring organic compounds composed of one oxygen and four carbon atoms. Furan derivatives are used in commercially important products *viz.* dyes, agrochemical bioregulators, essential oils, photosensitizers, cosmetics, fragrance and flavoring compounds. Derivatives of furan substituted at the 2- and 5-positions are commonly found throughout nature in various form show broad-spectrum pharmacological and biological activities *i.e.* insecticidal, pesticidal, herbicidal, antioxidant, antifeedent, antiviral, anti-HIV, immunosuppressive, antifungal, antineoplastic, anti-inflammatory, antimicrobial, antidepressant and anticonvulsant activity which created interest among researchers to synthesize new furan derivatives.

**PHY-PP-126****Niosomes – As a Novel Drug Delivery System****Renu**

College of Pharmacy, Pt. B.D. Sharma University of Health Sciences, Rohtak, Haryana, India- 124001

renutushir8@gmail.com

Drug delivery system are defined as formulation aiming for transportation of a drug to the desired area of action within the body with the help of appropriate carrier that protect the drug from rapid degradation or clearance & thereby enhances the drug concentration in the target tissue. Based on their biodegradable, biocompatible & non-immunogenic structure niosomes are promising drug carrier. Niosomes is a class of molecular cluster formed by self-association of non-ionic surfactant in an aqueous phase. The unique structure of Niosomes presents an effective novel drug delivery system with ability of loading both hydrophilic & lipophilic drugs. This lamellar morphology allows us to entrap two kinds of drug in a unique carrier simultaneously. Several factors affecting structure of Niosomes, such as: the nature and type of surfactant, amount of cholesterol, the critical packing parameter (CPP) and the used drug. These systems can be designed in such a way that is prescribed via different routes, such as oral, parental, topical, and so forth for use in drug delivery. It is a fact that liposome is similar to the niosomes in structure, but niosomes are more stable and are more cost effective, remain in the blood stream for a reasonable time than liposome which is useful for targeted drug delivery.

**PHY-PP-127****Edible Vaccines: Improvising Plant to Food Biotechnology****Arpit Srivastava, Abhishek Soni**

School of Bio-Engineering and Bio-Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

arpitamity.biotech786@gmail.com

Edible vaccine is an amalgamation of Plant Genetic Engineering and Food Biotechnology. Recombinant quality innovation. The most surely understood present day biotechnology, empowers plants, creatures and micro-organisms to be genetically modified with novel attributes, what is conceivable through conventional reproducing and determination advancements to encode novel proteins. Edible vaccines incorporate all vaccine that are delivered in a kind of edible arrangement with some portion of plant, its natural product or sub products obtained from that plant, which upon oral ingestion, fortified immune framework. An antigenic protein must be brought into the plant of common interest by genetic engineering procedures. Consequently, plants like tomato, banana and cucumbers are in demand for preparation of edible vaccines. It has been observed that antigen articulation in seeds permit upkeep and strength for longer periods. Edible vaccines are particularly found in mucosal activities in conjunction with systemic immunity. These improvised vaccines like conventional subunit vaccine, comprise of antigenic protein and are without pathogenic genes. Imperative favorable formation of edible vaccine is elimination of contamination with creature infection like MCD ailment. There is a risk in vaccines created from refined mammalian cells, as plant infections can't contaminate humans. After the hypothetical testing, antigen expression in plants like LT-B in tobacco and tuber crop, rabies virus – G protein in tomato, HBsAg in tobacco & potato, NWV in tobacco and potato, cholera toxin - B (*Vibrio cholera*) in a potato were tested. The ethical demonstration, creation and commercialization of next generation vaccines are centered on narrow research field of plant and food biotechnology.

**PHY-PP-128****Design, Synthesis and Biological Activity of Pyrimidine Derivatives as Promising Antimicrobial and Anticancer Agents****Sanjiv Kumar, Balasubramanian Narasimhan**

Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

sanjiv.pharmchem@gmail.com

A new class of pyrimidine derivatives was synthesized and evaluated its biological activity i.e. antimicrobial and anticancer activity. The molecular structures of newly developed pyrimidine derivatives were confirmed by physicochemical properties and spectral studies. The synthesized pyrimidine derivatives were evaluated for their *in vitro* antimicrobial activity against selected Gram positive; Gram negative bacterial and fungal strains by tube dilution method and compared to the standard cefadroxil and fluconazole. The anticancer activity of the synthesized compounds was determined against human colorectal carcinoma cancer cell line by Sulforhodamine B (SRB) assay. The antimicrobial screening results indicated that compounds, q1, q16, q19 and q20 exhibited promising activity against selected microbial species. Compound q1 has emerged as potent anticancer molecule against human colorectal carcinoma cancer cell line than the reference drug, 5-fluorouracil. These compounds may be used as lead scaffolds to discover new antimicrobial agents.

**PHY-PP-129*****In-Silico and In-Vitro* Activities of “Citral”: An Essential Oil****Shagufta Habib, Pawan Gupta, Jeena Gupta**

School of Bioengineering and Biosciences, Lovely Professional University, Phagwara,

Punjab, India-144411

shaguftakar@gmail.com

Citral is one of the main component of lemongrass oil which was extracted from lemon grass leaves and present at a concentration of approximately 65-85%. Citral is the mixture of two isomeric acyclic monoterpene aldehydes: Geranial and Neral. It has various remedial properties such as enhancing skin health, vision improvement, acts as flavoring agent, used in perfumes and skin care products but many biological properties of Citral are still less evaluated. The objective of this article is to elucidate the biological properties of Citral using both in-silico and in-vitro approaches. The in-silico analyses demonstrated the potential binding of Citral with PPAR gamma receptor, hence it can be a natural PPAR gamma agonist. Increased DPPH inhibition with increased Citral concentration further highlights the antioxidant activity of Citral. It was also found to be a potent antimicrobial agent against various fungal and bacterial strains and MIC of Citral determined for bacteria and fungus were 0.27 mg/mL and 4mg/mL respectively. Furthermore Citral was also found to protect yeast cells from cytotoxic effects of hydrogen peroxide as demonstrated by MTT assay. These studies will be making a roadmap in drug design and discovery process for identification of novel compounds using ligand based similarity searching.

**PHY-PP-130****Nanoparticles for Dissolution Enhancement of BCS Class II Drugs****Reena, Harish Dureja**Department of Pharmaceutical Sciences, M.D.U, Rohtak, Haryana, India-124001  
siwachreena51@gmail.com

The solubility, bioavailability and dissolution rate of drugs are critical parameters for accomplishing *in vivo* efficiency. The bioavailability of orally administered drugs depends on their ability to be absorbed *via* the gastrointestinal tract. For drugs belonging to Class II of biopharmaceutical classification system, the absorption process is limited by drug dissolution rate in gastrointestinal media. The desired drug concentration in systemic circulation can be achieved through the required dissolution of the drug in the biological environment, which ultimately affects the pharmacological responses. About 40% of the new drug entities exhibit poor solubility, which hinders the bioavailability. The development of drug nanoparticles (nano-drugs) has attracted substantial attention because it provides a feasible method to improve the dissolution rate and oral bioavailability of poorly water-soluble drugs. Nanoparticles enhance bioavailability through the improvement of dissolution rate and saturation solubility of drugs by virtue of their small sizes. Nanoparticles are generally prepared by two methods i.e. top-down method (e.g. wet milling and high-pressure homogenization) and bottom-up method (e.g. solvent-antisolvent, supercritical fluid process). Nanonization provides a conceivable pharmaceutical basis for improving oral bioavailability and therapeutic effectiveness of compounds by increasing their surface area.

***PHY-PP-131*****Cosmeceutical – Cosmetics along with Therapeutic Activity****Anjali**

Department of Pharmaceutics, Jamia Hamdard, New Delhi, India-110062  
anjalisinghrathe707@gmail.com

Nowadays a new hot topic emerged in the cosmetic industry is 'Cosmeceuticals', which is the fastest growing segment of the natural personal care industry. Cosmeceuticals are the future generation of skin care. They are the advances made within the world of dermatological products and the new backbone in skincare. All cosmeceuticals claim to contain functional ingredients with either therapeutic, disease-fighting or healing properties. The term Cosmeceutical was coined by Raymond Reed but the concept was further popularized by Dr. Albert Kligman in the late 1970's. Cosmeceuticals are topically applied as cosmetic pharmaceutical hybrids, intended to enhance the beauty through ingredients that provide additional health-related benefits. That means they are applied topically as cosmetics, but contain ingredients that influence the skin's biological function. Today's Cosmeceuticals are serving as a bridge between personal care products and pharmaceuticals. The term Cosmeceuticals can be used with different terms. For all the terms the definition remains the same, i.e., Cosmeceuticals formulations which are neither pure cosmetics like lipsticks nor pure drug like corticosteroids. It is a hybrid category of products lying on the spectrum between drugs and cosmetics. The various terms by which Cosmeceuticals can be substituted are active cosmetics, nutricosmetics, performance cosmetics, functional cosmetics, and dermaceuticals.



***PHY-PP-132***

### **Medicated Chewing Gums-A Mobile Drug Delivery System**

**Prerna Kaushik, Deepak Kaushik**

Department of Pharmaceutical Sciences, M.D. University, Rohtak, Haryana, India-124001  
pkaushik184@gmail.com

The reasons that the oral route achieved such popularity may be in part attributed to its ease of administration. Over the years, patient convenience and patient compliance-oriented research in the field of drug delivery have resulted in bringing out potential innovative drug delivery options. Out of which, medicated chewing gum (MCG) offers a highly convenient patient-compliant way of dosing medications including children and elders. It is a potentially useful means of administering drugs either locally or systematically via, the oral cavity. Chewing gum known as gum base (insoluble gum base resin) contains elastomers, emulsifiers, fillers, waxes, antioxidants, softeners, sweeteners, food colorings, flavoring agents, and in case of medical chewing gum, active substances. It offers various advantages over conventional drug delivery systems. Unlike chewable tablets, medicated chewing gums are not supposed to be swallowed and may be removed from the site of application without resorting to invasive means. Moreover medicated chewing gums require the active and continuous masticatory activities for activation and continuation of drug release. An in-vitro apparatus was specially designed and constructed for release testing of medicated chewing gums. Several ingredients are now incorporated in medicated chewing gum, e.g. fluoride for prophylaxis of dental caries, chlorhexidine as a local disinfectant, nicotine for smoking cessation, aspirin as an analgesic and caffeine as a stay alert preparation. Today improved technology has made it possible to develop and manufacture medicated chewing gum with predefined properties and it could be a commercial success in near future.



**PHY-PP-133**

### **Crucial Role of Nutraceuticals for Cardioprotection**

**Hardik Kumar, Arjun Singh**

Cardiovascular Pharmacology Division, Department of Pharmacology, Indo-Soviet Friendship College of Pharmacy, Moga-142001, Punjab  
arjunphar@gmail.com

Cardiovascular diseases (CVDs) are the leading causes of death globally and annually. According to WHO, Recent data indicates a rising trend in CVDs deaths from 17.7 million in 2015 (representing 31% of global deaths) to 23.3 million in 2030 representing a distinct growth pattern in developed and developing countries. India being a developing nation is experiencing the morbidity and mortality due to increasing CVD with increase in longevity and income levels. It is the most common health-related and economic issue worldwide and available clinically approved drugs which are used for CVDs having major side effects with their clinical therapeutic importance. So, we need to search some nutraceuticals which are used in our daily routine and their therapeutic benefits for other diseases. Dietary factors contribute to cardiovascular risks either directly or through their effects or other cardiovascular risks such as Hypertension and diabetes mellitus etc. Nutraceuticals are natural nutritional compounds which have shown efficacious in prevention or treatment of cardiovascular diseases. Several plant derived Nutraceuticals such as Garlic, Oat Straw, Chaulai, Guggal have cardioprotective activity and lowers the level of cholesterol. Nutraceuticals are natural products derived from food sources that provide extra health benefits in addition to basic nutrition value present in food. Nutraceuticals are classified on basis of their therapeutic importance and are Anti-oxidants, Prebiotics, Probiotics, and Dietary Fibres. The cardiovascular benefits of naturally occurring phytoestrogens and its metabolite had gained importance in cardiovascular diseases containing populations consuming rich soy-based Asian food may be due to increased endothelial nitric oxide synthase (eNOS) expression and enhanced bioavailability of nitric oxide.

**PHY-PP-135****Association of Language and Gender with the Psychological Disorders (Anxiety And Depression) in Undergraduate Pharmacy Students: A Questionnaire Based Survey****Bikram Singh, Maninder Singh, Arshvir Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

bikramsingh2864@gmail.com

Background: Few studies have examined modifiable psychosocial risk factors for mental disorders among university students, and of these, none has employed measures that correspond to clinical diagnostic criteria. The aim of this study was to examine psychological and demographic risk factors for major depression and generalized anxiety disorder in undergraduate students. Material and Methods: A structured questionnaire was distributed to students to assess socio-demographic details and academic background. The patient health questionnaire-9 and generalized anxiety disorder for DSM-IV was used to measure psychological morbidity (depressive, and anxiety symptoms). Bivariate logistic regression analysis was carried out to identify the independent association between outcome and explanatory variables considering  $p$  value < 0.05 as significant. Results: Out of a total of 550 students, only 368 students completed the survey, in which 28 students were excluded, not satisfying the age, inclusion criteria. So, In total 340 students, 81.1 % student found to suffer from depression (Mild 38.5, Moderate 27.6, Moderately severe 12.6, Severe 2.4 %) and 79.9% from anxiety (Mild 32.6; Moderate 24.4; Severe 22.9 %). The risk of depression was higher for international students from non-english background or other languages, as their native language (COR=4.952, 95% CI 0.999, 24.545,  $p$  value=0.05), and the risk of anxiety was higher for male students comparison with female (COR=2.516, 95% CI 1.047, 6.050,  $p$  value=0.0390). However, the level of depression and anxiety found to be reduced significantly ( $p$  value=0.007 and 0.003) after the mid-term examination to 72.1% depression and 75.4%. Conclusions: In our study the GAD and PHQ-9 scores have shown its significant association with gender and language with prevalence of anxiety and depression, however, other academic background factors and other socio-demographic factors were not associated significantly. Declined level of anxiety and depression after MTE in students, shows recovery due to adequate adjustment, peer support.



***PHY-PP-136***

### **Potential of Novel Drug Delivery System for Herbal Medicines**

**Neha Minocha**

Department of Pharmaceutical Sciences, Baba Mastnath University, Asthal Bohar, Rohtak, Haryana, India -124001  
nehaminocha007@gmail.com

In recent years, a variety of naturally occurring dietary compounds (herbal medicines) have been shown to possess significant therapeutic properties and fewer adverse effects as compared to the modern medicines. Certain modifications are required for delivery of herbal drugs in order to increase patient compliance and to achieve sustained release. The novel formulations of plant actives and extracts (i.e. microemulsion, nanoemulsion, nanoparticles, liposomes, niosomes etc.) are reported to have significant advantages over conventional formulations including enhancement of solubility, stability, bioavailability, sustained delivery, and protection from chemical and physical degradation. This oral presentation summarizes various drug delivery technologies which can be used for herbal active.



***PHY-PP-137***

**Theranostics: A Tailored Disease Treatment Approach**

**Salisha, Vijay Mishra, Charanpal Singh, Surbhi Bassi**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab,  
India-144411  
panja86@gmail.com

Medicines have been used since antiquity for improvement of health or the reduction of the morbidity state. The process of treatment involves two steps, Diagnosis, which involves the identification of the type of disease or the causative organism and, Therapy, involving the use of various medicinal agents or drugs for the eradication of the symptoms or the cause of the disease. The principle of “one medicine fits all” is now being replaced by the “Personalised medicine” due to inter-patient variability. Theranostics is a modern approach for achieving the mentioned task. The portmanteaus of therapy and diagnostics, theranostics are agents which incorporate both the diagnostic agent as well the therapeutic agent in a single entity. It utilizes the advantages of nano-platforms having the capability of handling targeting agent, imaging agent and carrying the drug all in a single moiety. Theranostics have number of advantages over the conventional systems, which makes their research popular these days. These can be classified into targeted, non-targeted and leveraged theranostics based on the bonding between components. Iron oxide nanoparticles (NPs), gold NPs, carbon nanotubes, dendrimers, quantum dots, silica NPs and others have been researched for potential activity as a theranostic agent. Sufficient in-vivo data backup is unavailable for them, which serves as the possible disadvantage.

**PHY-PP-138****A Comprehensive Review on Recent Herbs having Anticancer Potential****Mohit Manchanda, Manju Nagpal**

Chitkara College of Pharmacy, Chitkara University, Chandigarh-Patiala Highway, Rajpura, Punjab, India-140401  
mmclicks1994@gmail.com

Cancer is a frightful disease and any practical solution in fighting this disease is of paramount importance to public health. Besides the rationalized allopathic drugs, it is worth to evaluate traditional folk medicines i.e. a plant based therapy. There are tremendous reserves of organic compounds found in many plants on Earth that only a very small amount of which **as** anti-cancer compounds. Worldwide endeavors are underway to discover new anti-cancer drugs. Nowadays, there is increasing the tendency to the use of traditional and herbal medicines in cancer treatment due to severe side effects of allopathic drugs used to arrest the insidious nature of the disease. Many herbs have been evaluated in clinical studies and are currently being investigated phytochemically to understand their anti-tumor actions against various cancers. Thus, cancer patients who are burdened by drug-induced toxic side effects, have now turned to hunt for help from the complementary and alternative medicine hoping for a better cure. The oversight of this paper is aimed to investigate various medicinal plants which are widespread in many parts of the world and have been used for the treatment of cancer.

**PHY-PP-139****Enhancement of *in-Vitro* Antioxidant Potential of *Terminalia Chebula* by Various Fruit Extracts and Optimization of Concentration by Response Surface Methodology (RSM)****Geetika Sharma, Tulika Mishra**Department of Biotechnology, Chandigarh University, Mohali, Punjab, India-140413  
geetikabiotech.cgc@gmail.com

The main objective of this study was to determine the enhancement of *In-vitro* antioxidant potential of fruits of *Terminalia chebula* when used in combination with fruit extracts of *Phyllanthus emblica*, *Ananas comosus* and *Punica granatum*. Hydroxyl (OH) radical scavenging and DPPH (2,2-diphenyl-1-picrylhydrazyl) free radical scavenging assays were used to analyze the antioxidant potential. Formulations of different combinatorial concentrations of fruits to prepare a mixture were achieved with Central Composite Design through RSM (Response Surface Methodology). Screening of 300 different combinations of various concentrations was done through OH radical scavenging assay followed by statistical analysis of data. Further validation of results was done by measuring the antioxidant potential of most bioactive extracts by DPPH method. Screening of samples revealed the samples with highest percent inhibition in aqueous (85.2%), ethanolic (92.9%) and aqueous-ethanolic (84.21%) extracts. Data were subjected to ANOVA (Analysis of Variance) and generated a 3D response surface plot for highest activity. Further subjecting these extracts to DPPH assay revealed a significant enhancement in the antioxidant potential of ethanolic extract of *T. chebula* when used in mixture with other plants. Antioxidant activity of *T. chebula* was enhanced when used in combination with other fruits extracts. These synergistic studies generating valuable interactions between various phytochemicals could lead to a momentous increase in other associated activities to fight against diseases like cancer and cardiovascular disorders etc.

**PHY-PP-140****Gastro-Retention as Novel Drug Delivery Approach: An Update****Surbhi Bassi, Vijay Mishra, Charanpal Singh, Salisha**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

surbhibassi007@gmail.com

Drug delivery via the oral route is the most preferred method of drug delivery. Even after tremendous research and advancements, numerous advantages are served by the conventional drug delivery, like a tablet, makes it most widely acceptable. Variations in the absorption and physiological harshness in stomach led to the development of novel approach of gastro-retention. Drugs with solubility, stability, and absorption problems are better handled, thereby, aiding increased bioavailability, solubility and localisation of drug in the stomach for local therapy. Various approaches for gastro-retention of drug include the floating approach and non-floating approach. Floatation principle is widely employed and techniques used are effervescent systems, alginate systems, microporous compartments, hydrodynamic balanced systems, hollow microspheres, etc. Non-floating dosage forms are also fabricated in form of high density systems, bioadhesive systems, folded polymer films, magnetic driven systems, etc. The recent advancements include super swellable systems and the raft forming mechanism. The dosage forms fabricated for retention can be evaluated for quality control tests both in-vitro and in-vivo. Various tests include buoyancy lag time, specific gravity, swelling index, floatation time, resultant weight, bioadhesion, drug permeability, dissolution, water uptake, etc. The in-vivo studies involve use of radiology, gamma scintigraphy, gastroscopy, endoscopy, etc.

***PHY-PP-141*****Development of Osmotically Controlled Drug Delivery System of Metformin Hydrochloride****Karan Jangra, Deepak Kaushik**Department of Pharmaceutical Sciences, M. D. University, Rohtak, Haryana, India-124001  
mr.kay376@gmail.com

The aim of the present study was to formulate osmotically controlled drug delivery system (O-CDDS) of Metformin hydrochloride to reduce the frequency of multiple dosing in diabetes mellitus type-II. Metformin hydrochloride has poor biological half-life of 6 hrs. The O-CDDS of Metformin hydrochloride is a recent approach for the zero order release profile. Wet granulation using PVP K90 as a binder was done for the preparation of core tablets. For the preparation of semi-permeable membrane, coating of cellulose acetate using polyethyleneglycol (PEG)-400 as plasticizer was done. Different factors like % coating (3-5%), % of plasticizer (PEG-400) (10-20%), release modifier (HPMC K4M CR) (0-50 mg) were optimized using central composite design. This study demonstrated the pH independent zero order release and hydrodynamics of dissolution.



**PHY-PP-142**

### **Formulation and Evaluation of Inclusion Complexes of Atorvastatin using Captisol**

**Anupreet Arora, Manju Nagpal**

Chitkar College of Pharmacy, Chitkara Univerisity, Rajpura, Patiala, Punjab, India -140401  
anuretarora43@gmail.com

The aim of the study was to explore the impact of atorvastatin sulfobutyl ether beta cyclodextrin complex (ATR-SBE- $\beta$ -CD) on ATR dissolution behaviour. Various batches of inclusion complexes were formulated using various drug: polymer ratios (1:1, 1:3 and 1:5); using  $\beta$ -CD and SBE- $\beta$ -CD by two methods i.e. freeze drying and kneading method. Phase solubility studies were carried out of all the complexes and ratio 1:5 (ATR- SBE- $\beta$ -CD) prepared by freeze drying yield maximum solubility enhancement (30-fold in comparison to pure drug). Further, Fourier transformation infrared spectroscopies (FT-IR), Powder X-ray Diffractometry (X-RD), Scanning electron microscopy (SEM), Differential scanning calorimetry (DSC) studies were carried out. FTIR studies showed drug polymer interaction which confirmed the formation of inclusion complex of ATR with SBE- $\beta$ -CD. Reduction in drug crystallinity was observed by X-RD results and DSC studies confirmed inclusion of drug particles into SBE- $\beta$ -CD network. SEM studies indicated change in surface characteristics of drug in solid dispersion mixtures. In vitro dissolution of various complexes showed that rate of dissolution increased as the concentration of  $\beta$ -CD and SBE- $\beta$ -CD increases. Further 1:3 ratio of ATR- SBE- $\beta$ -CD complex exhibited maximum rate and extent of dissolution (65% in 15 min and 99% in 2h) out of all batches. Freeze drying technique using SBE- $\beta$ -CD produced better dissolution enhancement. The results revealed the suitability of SBE- $\beta$ -CD over  $\beta$ -CD for solubility enhancement of poorly soluble drugs owing to amorphous nature and more stable form of  $\beta$ -CD.



***PHY-PP-143***

### **Natural Corrosion Inhibitors for Metals: A Review**

**Akanksha Mishra, Sanjiv Kumar, Balasubramanian Narasimhan**

Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

akankshamish04@gmail.com

Corrosion of metals is deterioration of topmost layer of the metals due to various environmental factors which occur as the metals in presence of certain factors tend to return to their oxidized state. Use of metals like stainless steel 316 or 316L, copper, zinc, tantalum, and niobium are very prominent in the pharmaceutical field and prevention of corrosion is very important in order to maintain the proper standards of the manufactured medicinal drugs. Various inorganic and synthetic corrosion inhibitors are already available in the markets that are being used at wide scale in numerous pharmaceutical industries. These corrosion inhibitors cause a high level of toxicity and are difficult to be disposed of thus causing environmental damage. Therefore the study of synthesis and activity of corrosion inhibitors from natural sources like plants, animal and microorganism can be further encouraged in order to obtain more environment-friendly compounds which can be easily extracted using cost-effective extraction methods with enhanced anticorrosion activity. In the given review are mentioned certain examples of inhibitors that from the plant and microbial sources so that sustainable and ecological inhibitors can be promoted to be used by the various manufacturing units in open extent.

**PHY-PP-144****Various Applications of Transition Metal Complexes: A Review****Deepti, Mahesh Kumar and Balasubramanian Narasimhan**

Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

deeptimalik100@gmail.com

Schiff bases and their complexes are versatile compounds synthesized from the condensation of an amino compound with carbonyl compounds and widely used for industrial purposes. These compounds also exhibit a broad range of biological activities like antifungal, antibacterial, antimalarial, antiproliferative, anti-inflammatory, antiviral and antipyretic properties. Many Schiff base complexes show excellent catalytic activity in various reactions and in the presence of moisture. Over the past few years, there have been many reports on their applications in homogeneous and heterogeneous catalysis. The activity is usually increased by complexation therefore to understand the properties of both ligands and metal can lead to the synthesis of highly active compounds. The influence of certain metals on the biological activity of these compounds and their intrinsic chemical interest as multidentate ligands has prompted a considerable increase in the study of their coordination behavior. Development of a new chemotherapeutic Schiff bases and their metal complexes is now attracting the attention of medicinal chemists. This review compiles examples of the most promising applied Schiff bases and their complexes in different areas.

**PHY-PP-145****Chamomile: A Precious Medicinal Herb****Gurria, Amrinder Kaur**

School of Pharmaceutical Sciences Lovely Professional University, Phagwara, Punjab, India-144411

palakpatel1812@gmail.com

Chamomile is the one of the most ancient medicinal and aromatic plant known to mankind. The name Chamomile comes from the Greek words: *Khamai* (on the ground) and *melon* (apple). The plant has an apple like smell. This annual plant is the member of the Asteraceae family and is represented by two most popular varieties: *Matricaria recutita* (German chamomile) and *Chamaemelum nobile* (Roman chamomile). It is known by different names all over the world, such as Sweet false chamomile, Blue chamomile, Hungarian chamomile (German chamomile) and Sweet chamomile, True chamomile, English chamomile (Roman chamomile). The flowers of the plant yield blue oil that is extensively used in medicines, foodstuff, and cosmetics. The blue oil is volatile oil which constitutes matricin, alpha-bisabolol, alpha-bisabolol oxides A and B. It has the status of the calming herb as it induces sleep. Internally it is used to treat insomnia, nightmares, anxiety, convulsions, indigestion, flatulence, diarrhea, nausea, vomiting etc. It is used in medicine in the form of ointments, pouches, plasters and medicinal baths. Among various formulations, it is popularly used in the form of herbal tea which is consumed more than one million cups per day. The aim of this review is to discuss the investigation made by different experts for the potential of the drug.



**PHY-PP-147**

**Age and Consumption of Grapes as Significant Predictors of Psychological Distress among Hypertensive Patients: A Hospital Based Survey**

**ManinderSingh, BikramSingh, Arshvir Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Jalandhar, Punjab, India-144411

manindersingh009988@gmail.com

This study aimed to assess prevalence of psychological distress, its association with other socio-demographic factors, patient perception, lifestyle factors and use of herbal alternatives amongst hypertensive patients on follow-up (HTF), at Satguru Pratap Singh Hospitals (SPS Hospitals), Ludhiana, Punjab. Methods: The study was conducted among 275 HTF, using self-administered unstructured questionnaire in hard copy and psychological distress was assessed using the Kessler-10 scale. Bivariate logistic regression analysis followed by multivariate logistic regression analysis was carried out to identify the independent association between outcome and explanatory variables considering  $p$  value < 0.05 as significant. Results: The prevalence of psychological distress among hypertensive patients was 46.9%. Out of the total patients, 33 (15.42%) of them had disorders related to alcohol use and 19 (8.88%) of them were addicted to smoking habits. Patients with age 31-60 years (AOR=4.116, 95% CI 1.484, 11.414,  $p=0.007$ ), patients consuming grapes (AOR= 4.097, 95% CI 1.616, 10.388,  $p=0.003$ ) and patients with perception that hypertension is a deadly disease (AOR= 1.858, 95% CI 1.009, 3.421,  $p= 0.047$ ) were more likely to have psychological distress than patients of 18-30 age, not consuming grapes and other patients. Conclusion: This study revealed that use of alcohol and cigarette in hypertensive patients along with the prevalence of psychological distress, significantly associated with age, consumption of grapes and negative perception regarding hypertension.

**PHY-PP-148****A Review on Therapeutic Potential of Furan Derivatives****Prachee, Rakesh Kumar Marwaha**

Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana-124001

prachee.gupta94@gmail.com

Furan is the five membered aromatic heterocyclic compounds bearing oxygen atom exhibits versatile pharmacological properties. The furan ring is an electron-rich system that is responsive to various chemical reactions and easily forms hydrogen bonds with different kinds of biological enzymes. Furan is adaptable synthon for targeted-oriented and diversity-oriented synthesis. Furan derivatives have occupied exclusive place in the field of medicinal chemistry. The furan ring is facile to several chemical reactions and easily forms hydrogen bonds with different kinds of biological enzymes, owing to its electron rich system. The fusion of the furan nucleus is an important synthetic strategy in drug discovery. The therapeutic properties of the furan derivatives have encouraged medicinal chemists to synthesize enormous number of novel chemotherapeutic agents. Furan derivatives having various biological potentials like antibacterial, antifungal, antioxidant anti-inflammatory, insecticidal and antitumor activities. In this review, we provide concise overview of reported biological potential of furan derivatives in the medicinal field.

***PHY-PP-151*****Biological Activities of Coordination Metal Complexes: A Review****Shubham Kashyap, Sanjiv Kumar, Balasubramanian Narasimhan**

Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

shubhamkashyap103@gmail.com

Interaction between drugs and coordinate metals is an important and active research area. Schiff base complexes were considered to be among the most important stereo-chemical models in the main group and transition metal coordination chemistry due to their preparative accessibility and structural variety. Due to the synthetic flexibilities, the Schiff base displays selectivity as well as sensitivity towards the metal ions. Coordination metal complexes derived from Schiff bases have occupied a central role in the development of coordination chemistry. Although a large number of Schiff bases ligands have been investigated, similar studies on coordinated ligands are relatively scarce. It is well known that the action of many drugs is dependent on the coordination of metal ions. Many transition metal ions in living systems work as enzymes or carriers in a macrocyclic ligand environment. Coordination metal complexes [Fe(III), Co(II), Ni(II), Cu(II), Cd(II), Zn(II), Cu(II) and Hg(II)] of Schiff base having numerous biological activities i.e. antimicrobial, anticancer, antioxidant, anti-tubercular, anti-glycation, DNA cleavage etc.



**PHY-PP-153**

### **Phytosome: An Emerging Drug Delivery System**

**Swati Tyagi, Vijay Mishra**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

swatityagi2611@gmail.com

Novel drug delivery is an approach which excludes the shortcomings related with the conventional drug delivery system. Since ancient times for the maintenance of health some complex chemical mixtures are prepared from plants called, phytomedicines. But the use of these phytomedicines is limited as when these are administered orally these are poorly absorbed. In this regard Phytosome is a combination of two terms *phyto* means plant and *soma* means cell-like. India is enriched with vast knowledge of Ayurveda, whose potential is being realized in past few years.. In last few years many of the diseases are treated by the use of natural medicines. Phytosome is an advanced form of herbal formulations, which generally contains active phytoconstituents like flavonoids, terpenoids, glycosides extracted from plants, surrounded and bounded by lipid. Phytosomes show better pharmacodynamic and pharmacokinetic profiles as compared to the conventional herbal extracts.

**PHY-PP-155****Ferulic Acid-A Chemical Marker for Differentiation of Official Substitutes/Adulterants of Mahameda (*Polygonatum Verticillatum*)****Jaswinder Kaur Virk<sup>1</sup>, Parveen Bansal<sup>1</sup>, Vikas Gupta<sup>1</sup>, Sanjiv Kumar<sup>2</sup>, Ranjit Singh<sup>3</sup>**<sup>1</sup>Baba Farid University of Health Sciences, Faridkot, Punjab, India-151203<sup>2</sup>Central Ayurveda Research Institute for Respiratory Disorders, Patiala, Punjab, India-147001<sup>3</sup>Shobhit University, Gangoh, Uttar Pradesh - 247341, India.

virkjaswinder111@gmail.com

*Polygonatum verticillatum* is commonly known as Mahameda. It has a very high therapeutic value and globally used in herbal medicine for thousands of years. Mahameda is a vital ingredient of number Ayurvedic formulations. Due to indiscriminate usage, decreased cultivation increased market demand followed by loss of habitat and destructive collection from natural resources/forest, Mahameda plant has entered into the category of endangered plants. To overcome the paucity of the original plant, Dept of AYUSH has recommended the use of substitutes Shatavari (official) and Salam mishri. It is pertinent to mention here that substitutes of Mahameda have different phytochemical, pharmacological/Ayurvedic profile of drug action and available at very low rates as compared to an original plant. The use of these substitutes may affect the therapeutic efficacy of the concerned formulation. Manufacturers exploit this situation by using substitutes and claiming high price in name of original plants. Hence there was a need for differentiation of original plant from substitutes. The present study offers a marker of Mahameda that is absent in its official substitutes and can be used as a noble and confirmatory marker to avoid substitution by official substitutes.

**PHY-PP-156****Review on *Citrullus Colocynthis* (Cucurbitaceae): A Bliss Or Bias****Harpreet Madar, Amrinder Kaur, Aarti Bhardwaj**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab,

India-144411

hmadar7@gmail.com

*Citrullus colocynthis* from Cucurbitaceae family is a great herbal plant with a number of medicinal properties in it. This fruit-bearing plant is commonly known as *Indravaruni* and has many common names like bitter apple, bitter cucumber, wild gourd etc. This perennial herb is native to Africa and India. It is commonly found in sandy lands of Punjab, Sindh and Central and southern India. The leaves, bark, and root of the plant are medicinally important. Various constituents are present in it like protein, tannins, carbohydrates, saponins, alkaloids, steroids, cardiac glycosides etc. It is widely used in traditional medicines to treat jaundice, asthma cough, spleen disease, diabetes, skin disease, worms and thyroid enlargement. Though it has medicinal properties in it it also carries side effect like kidney damage, bloody diarrhea, bloody urine, severe irritation in the stomach and intestine lining. Death has been reported following ingestion of one to one and a half teaspoon of powder. The present review deals with chemical components, medicinal uses and recent investigations on therapeutic activities of *Citrullus colocynthis*. It is an attempt to create awareness for the potential of the drug as a source of a compound of medicinal value.

**PHY-PP-157****A Review on Memory Enhancer Drug: *Bacopa Monnieri* (Scrophulariaceae)****Nitika Anand, Amrinder Kaur, Simranjeet Kaur, Aarti Bhardwaj**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

nitika.anand.756@gmail.com

In ancient times, few herbs have been utilized generally as brain or nerve tonics. One of the most popularly used neurotonics is *Bacopa monnieri*, an outstanding memory booster. It belongs to family Scrophulariaceae and famous by the name of Brahmi. This name indicates its greatness as it is originating from Sanskrit term Brahman which indicates “What gives knowledge of Brahman or Supreme reality?” and “That which expands consciousness”. Other names are also given to plant like *Saraswati* (the goddess of learning), *Suresta* (liked by the Gods) and *Divy* (divine). It is a semi-aquatic, creeping, succulent herb which is commonly found in tropical and sub-tropical regions of India, Pakistan, China, Sri-lanka, Nepal, and Thiwan. It contains chemical constituents like alkaloids, bacoside A, brahmine, triterpenoid saponins, nicotine, herpestine, D-mannitol etc. The reported pharmacological studies suggested that *Bacopa monnieri* possesses many pharmacological effects like nervous system effects (antidepressant, memory enhancer, anti-convulsant, antiparkinson and anxiolytic), anti-inflammatory, cardiovascular, anti-microbial, anti-oxidant and smooth muscle relaxant effect. The present work reviews the information of the plant so that more research can be carried out effectively.



### **PHY-PP-158**

#### **Role of *Carica Papaya* in Aging as a Potent Antioxidant**

**Ravinder Singh, Munish Garg, Chanchal Garg**

Department of pharmaceutical sciences, Maharishi Dayanand University, Rohtak, Haryana, India-124001.

sravinder648@gmail.com

When skin is exposed to too many environmental factors reactive oxygen species (Free radicals) are produced. Reactive Oxygen species are the stimuli that also stimulate collagenase, elastase and hyaluronidase activity which in turn leads oxidative alterations in collagen, elastin materials and changes in membrane characteristics and promote to skin aging. Antioxidants are used to prevent aging. *Carica papaya* Linn. is one such herbal drug commonly known as papaya that belongs to the family Caricaceae. Papaya consists of three potent antioxidants vitamin C, vitamin A, and vitamin E; the natural resources, manganese and potassium; the B vitamin pantothenic acid and folate and fibers. *Carica papaya* is a well known medicinally valued plant. Although the efficacy of *Carica papaya* fruit is less investigated. The main objective of the present work is to evaluate the antioxidant activity of *Carica papaya* fruit extracts. This study was conducted to establish an antioxidant potential profile of extracts of fruits of the *Carica papaya* Linn with three major solvents i.e. water, n-butanol and ethyl acetate, using DPPH free radical scavenging assay. This study revealed that the water extract of the fruit of *Carica papaya* has potential antioxidant activity. This study concludes that *Carica papaya* fruits have antioxidant and antimicrobial activity. It can be a potential source for commercial antiaging agents.

**PHY-PP-161****Ultrasound in Synthetic Organic Chemistry****Ashish Gakkhar**

Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

gakkhar.ashish12@gmail.com

The word 'ultrasound' has become common knowledge due to the widespread use of ultrasound scanning equipments in medical applications. Ultrasound refers to sound waves having frequencies higher than those to which the human ear can respond ( $\mu$ , > 16 khz). High frequency ultrasound waves are used in medical equipments. The use of ultrasound in chemistry (sonochemistry) offers the synthetic chemist a method of chemical activation which has broad applications and uses equipment which is relatively inexpensive. The driving force for sonochemistry is cavitations and so a general requirement is that at least one of the phases of the reaction mixture should be a liquid. Its development in the recent years however has revealed that it has far wider applicability than this and also that it presents a significant scientific challenge to the understanding its underlying physical phenomenon - acoustic cavitation. The ever expanding number of applications of sonochemistry in synthesis has made the subject attractive to many experimentalists and interest has spread beyond academic laboratories into industry and chemical engineering. Now a day ultrasound used in chemistry which include synthesis, environmental protection, destruction of both biological and chemical contaminants and process engineering i.e. Improved extraction, crystallization, electroplating and new methods in polymer technology.

**PHY-PP-162****Natural Remedies for Polycystic Ovarian Syndrome (Pcos): A Literature Review****Sabharwal Sakshi, Bhardawaj Aarti**

Department of Pharmaceutical Sciences, Lovely Professional University Phagwara, Punjab, India-144411

sshiny06@gmail.com

Polycystic ovarian syndrome (PCOS) is a heterogeneous endocrine disorder with variable prevalence, affecting about one in every 15 women worldwide. The diagnosis of PCOS requires at least two of the following criteria: oligo ovulation and/or anovulation, clinical and/or biochemical evidence of hyperandrogenism and morphology of polycystic ovaries. Women with PCOS appear to have a higher risk of developing metabolic disorders, hypertension and cardiovascular disorders. It can even cause insulin resistance, anovulation and infertility on prolong incidence of cysts. Since PCOS is a curable disorder, it can be cured by use of natural remedies or allopathic medication. The natural remedies include treatment with phytoestrogenic and non-estrogenic herbs such as Liquorice, Ginseng, Aloevera, Cinnamon, Spearmint Tea, Flaxseed, Chaste berry and Chamomile which are effective and safe. The aim of this abstract is to find the research gap between PCOS and can be cure with the help of various herbs, so that new formulations can be prepared to manage the condition.

**PHY-PP-163****Involvement of GABA, Glutamate and Nitric Oxide in the Anxiolytic-Like effects of Pyridoxine in Mice****Vaibhav Walia, Munish Garg**

Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

vaibhav.walia00@gmail.com

Pyridoxine plays a key role in the synthesis of GABA. In the present study authors investigated the anxiolytic-like effects of pyridoxine in mice. Pyridoxine (90, 180 and 360 mg/Kg, i.p.) was administered to the mice and anxiety-related behavior were determined by light and dark box (LDB) and elevated plus maze (EPM). Glutamate, GABA, and nitrite levels were determined in the whole brain of the mice. Our results suggested that pyridoxine (180 mg/Kg, i.p.) exerted anxiolytic-like effects in EPM and LDB. Also pyridoxine (180 mg/kg, i.p.) significantly increased the levels of GABA, and decreased the levels of glutamate and nitrite in the brain of mice as compared to control. Administration of PTZ (20 mg/kg, i.p.) exerted anxiogenic effects in mice and the combined administration of PTZ and pyridoxine abolished the anxiolytic-like effects of pyridoxine in mice, suggesting the possible role of GABA in the anxiolytic-like effects of pyridoxine in mice. It is concluded that pyridoxine exerts an anxiolytic effect by increasing the synthesis of GABA in the brain.

***PHY-PP-164*****Apple Cider Vinegar - An Asset****Vinit Bassi, Anmol Sehgal**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

vinibassi7696@gmail.com

Apple cider vinegar (ACV) is made from apple cider by the process of fermentation. It contains a small amount of vitamins or minerals including Magnesium, Phosphorous, Potassium, and Calcium. Quality apple cider vinegar also contains some amino acids and antioxidants. Organic ACV is vinegar in its natural form whereas; Non-organic ACV is vinegar that has undergone pasteurization. Pasteurized ACV is devoid of essential nutrients. It is used for the treatment of Diabetes (Antihyperglycemic effects of acetic acid), Cancer (slows the growth of cancer cells or even kill them). It is also used in case of losing body weight (due to fibre content of ACV), lowering down high cholesterol level (pectin in ACV binds to LDL and eliminates cholesterol), getting rid of dandruff, lice and warts (antifungal activity of ACV), treating skin bruises (anti-inflammatory and exfoliating properties). ACV is a useful alternative to commercial mouthwashes (antibacterial property helps with bad breath). It can be used for reducing, increased potassium levels in the blood as in diabetic ketoacidosis, Addison's disease. However drinking a lot of ACV can cause heartburn, ulcer, intestinal pain (due to acidic content) and lowers down potassium levels in the body.

**PHY-PP-165****Caprylic Acid: A Growing Boon****Anmol Sehgal, Vinit Bassi**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

anmolchopra29@yahoo.in

Caprylic acid, an eight-carbon fatty acid found in coconut oil, has found various growing benefits and proves promise, with ongoing research, in various diseased and ill conditions. Caprylic acid can cross the blood-brain barrier and has anticonvulsant and neuroprotective effects with promising effects in the treatment of Alzheimer's disease, can inactivate bacteria by creating an acidic environment, cures various skin conditions, shows antifungal property by physically disturbing the membrane, resulting in the increased fluidity of the membrane. This will cause changes in membrane proteins, cytoplasmic disorder, and eventually cell death. These fatty acids help in weight loss, protection from heart disease by suppressing IL-8 secretion and also interferes with virus assembly and viral maturation. Caprylic acid can also help to treat Crohn's disease, which is a chronic inflammatory bowel disease which can affect the gastrointestinal tract. Studies have revealed that caprylic acid can be used to treat a number of candida yeast infections. These fungal yeast infections include vaginal yeast infections, jock itch in males, ringworm, oral thrush and nail fungus. In addition, caprylic acid can be used in cases of eczema and psoriasis. Therefore, due to its uses and benefits, caprylic acid qualifies as a potential candidate for further research and exploration.



**PHY-PP-167**

### **Application of Herbs in Cosmetic Preparations: A Review**

**Memory Musonda, Sujit Bose, Manpreet Singh, Amneet Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara,  
Punjab, India-144411

Cosmetics can be characterized as any material that is utilized for the beautification or change of appearance. The term cosmetics was gotten from the Greek word "Kosmeticos" which intends to decorate or adjust. They can be characterized chiefly based on their utilization which incorporate including skin makeup, nail beautifiers, teeth beautifiers, care products, eye beautifying agents and hair makeup. Cosmetic formulations have various ingredients that are added in order to complete the product which include water, oil, fats, waxes, humectants, surfactants, preservative, perfumes and color. Different herbs are being utilized against skin break out, cell reinforcement, skin treatment and hair treatment which incorporate aloe vera, henna, coconut oil and sunflower oil. Today there are numerous advertised natural products that have been brought into the market. These homemade beautifiers incorporate olive oil, sheen shower that is utilized as a part of hair treatment as a natural hair root stimulator, facial washes, for example, lotus proficient lighting up cream used to brighten and influence the skin to shine, for the extremely dry skin nivea cocoa sustain oil in moisturizer can be utilized. There are various natural herbs that help in the formulation of the cosmetics for preserving and enhancing beauty. Apart from their beautifying purposes, these herbal cosmetics can be used to cure medical conditions such as hyper pigmentation, skin rashes, dry skin, skin aging as well as skin wrinkling and as antioxidants. Today herbal cosmetics are one of the most affordable and available products in the market.



**PHY-PP-168**

### **Chitosan Derivatives: Synthesis and their Biological Evaluation**

**Varsha, Saloni Kakkar, Anurag Khatkar**

Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

mayudhankhar39@gmail.com

Natural polymers were being investigated with renewed enthusiasm as it has tremendous unexploited potential. Chitosan, a versatile hydrophilic polysaccharides derived from chitin and its material that can significantly improve the standard of living in developing countries. By the modification with N-acyl and amino groups, chitosan increased their hydrophobic character and changed its structural features to be more suitable as a biological activity. However, the various derivatives of chitosan developed by different researchers during the recent years are briefly described as: carboxylation, N-phthaloyl chitosan, chitosan triphosphate nanoparticles and metal biocomposites. Chitosan was unable of being dissolved in water, organic solvents and aqueous bases however get dissolved after stirring in acetic, nitric, hydrochloric, perchloric and phosphoric acids. The reactivity, degree of polymerization, solubility and biodegradability of chitosan and adsorption of substrates depend on the extent of protonated amino groups in the chain of polymer. A new series of  $\alpha$ -aminophosphonates including chitosan moiety was obtained in high yields from reactions of chitosan with aromatic aldehydes and triphenylphosphite in the presence of lithium perchlorate as a catalyst Therefore, these reactive functional groups were readily subject to chemical modifications to alter its physico-mechanical properties. The present review is dedicated to the advancements in the chitosan based derivatives and their special attention in synthesis and biological activity in pharmaceutical field was also addressed.

**PHY-PP-169****Design, Synthesis and Biological Study of N-(Substituted Benzylidene)-4-(4-Bromophenyl)-Thiazol-2-Amine Derivatives****Deepika Sharma, Balasubramanian Narasimhan**Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001  
deepikashrma07@gmail.com

A series of *N*-(substituted benzylidene)-4-(4-bromophenyl)-thiazol-2-amine derivatives was synthesized and its molecular structures were confirmed by physicochemical and spectral means. The synthesized thiazole derivatives were evaluated for *in vitro* antimicrobial activity against selected Gram-positive, Gram negative bacterial and fungal strains by tube dilution method. The *in vitro* antimicrobial activity results indicated that compound p2, p6 and p8 were found to be most active against selected microbial species and compared to standard norfloxacin and fluconazole. The *in vitro* anticancer activity was determined against an oestrogen receptor positive human breast adenocarcinoma (MCF-7) cancer cell line using SRB assay and compared to standard 5-fluorouracil. The anticancer activity results showed that the compounds, p2 and p9 were found to be most potent against human breast adenocarcinoma (MCF-7) cancer cell line.



**PHY-PP-170**

### **The Future of Natural Beauty- Herbal Cosmetics**

**Sagar Rana, Komal Preet, Vandna Kalsi**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

sagarrana7298@gmail.com

Herbal cosmetics are defined as “natural cosmetics” which contain phytochemicals from plant sources, which affect the function of skin and hair and provide necessary nutrients to them. With the emergence of civilization, the human race has been allured by herbs and their effective remedies. At that time, there were no cosmetic creams and surgeries. The only thing they had was knowledge of nature and it proved beneficial to them for curing various problems and diseases. These cosmetics not only embellish the skin but also guard it against the external environment. Cosmetics singly are not satisfactory to protect body and skin. These need an association of active ingredients to control the harm and aging of the skin. Herbal cosmetics are cropping up as the convenient solution to ongoing complications. Herbal cosmetics are the preparations which mean cosmetics linked with bioactive ingredients. These contain phytochemicals which serve the dual purpose- they intensify the skin, hair, nails and body and the biological ingredients present in them, influence biological functions of the skin. The herbs provide vitamins, proteins, antioxidants, essential oils, proteins, and terpenoids. Herbal cosmetics include hair and skin preparations such as hair tonic, hair dyes, hair oils, lotions, creams, face-packs, face-wash, and powders. The present trend towards herbal cosmetics is inclining at a good pace and their demand has increased manifold from past decade. The market research shows accelerating the shift in the herbal trade and herbal cosmetic industry. The present-day interest of buyers in herbal cosmetics has been encouraged by fall in trust in recent cosmetics as they contain synthetic chemicals which may harm skin and body. Scientific evaluations of herbs have been conducted. It is needless to mention about plants like *Aloe vera*, *Azadirachta indica*, *Mimosa tenuiflora*, *Lawsonia inermis*. This article highlights the significance of herbal cosmetics and their advantages. The study aimed at reviewing the importance of hair and skin cosmetics for the treatment of baldness, alopecia, greying of hair, dandruff, acne, antiaging, antiinflammatory. Essential oils impart many benefits, such as a pleasant aroma, especially in perfumes and to impart shine or conditioning in hair care products, and for improving the elasticity of the skin.

**PHY-PP-171****Ouabain Analogues as Potent and Selective Non-Hormonal Male Contraceptive****Akshay Aggarwal**

PDM College of Pharmacy, Bahadurgarh, Haryana, India-124507

akshayaggarwal17396@gmail.com

Contraception is an accepted route for the control of population explosion in the world. Traditionally, hormonal contraceptive methods have focused on women. Thus, male contraception by means of hormonal and non-hormonal methods is an attractive alternative. Male hormonal contraception aims to bring a suppression of spermatogenesis using hormonal supplementation. But, the infertility produced this way should be reversible. To achieve a target oligospermia or azoospermia, intratesticular testosterone levels should be reduced in addition to suppressed FSH. But the drawback is that, an adequate suppression of spermatogenesis may not be seen in one-third of the patients in whom an additional agent may be required. However, non-hormonal targets of contraception include sperm production at the testicular level, sperm maturation at the level of epididymis and sperm motility. Obviously, the selectivity, specificity and lesser side effects compared to hormonal methods make these approaches attractive. Latest is the development of Ouabain analogues as an effective and selective inhibitor of sperm functioning based on in-vivo studies in male mice, resulting in complete infertility, making it an attractive target for male contraception.

**PHY-PP-172****Production of Strategically Important Polymer Polyhydroxybutyrate (Phb) in Plant Cells****Harpreet Kaur and Anand Mohan**

School of Bioengineering and Biosciences, Lovely Professional University, Phagwara,  
Punjab, India-144411  
anandmohan77@gmail.com

Plastics are deeply incorporated into our life. Whether in the field of automobiles or medicines, plastics have been exploited in each and every manufacturing industry around the world. Every year around 25 million tons of plastics are produced by the manufacturing industry and as far as the decomposition is concerned, there is the almost negligible rate of biodegradation of synthetic plastics. High molecular weight polyhydroxybutyrate (PHB) is one of the bacterial polyesters that have properties similar to some petrochemically produced plastics. Plant-based productions have the potential to make this biorenewable plastic highly competitive with petrochemical-based plastics. Production of PHB from transgenic *Arabidopsis thaliana* plant cells involves expression of two genes from bacterium *Alcaligenes eutrophus*. The PHB produced accumulates in bacteria in the form of electron-lucent granules. Synthesis of PHB from *A.eutrophus* is done with the help of acetyl-CoA by sequential action of various enzymes which further gets condensed to form acetoacetyl-CoA reductase. Higher level of renewable, biodegradable plastic (PHB) can also be produced from tobacco (*Nicotiana tabacum*) plant with the help of optimized genetic construct for plastid transformation using an operon extension strategy. Different plant and viral promoters such as maize and rice polyubiquitin promoter, the maize chlorophyll A / B-binding protein promoter and a Cavendish banana streak badnavirus promoter are used in sugarcane (*Saccharum* spp.) along with multi-gene and single-gene constructs to increase PHB levels. Other potential strategy to increase PHB production is to increase the amount of recombinant protein expression in the plant. These includes the use of tissue-specific or constitutive promoters, optimization of the initiation codon position and context, control of gene expression by 5' and 3' untranslated regions and optimization of transgene coding regions. With the advancement in the available technologies, it would become possible in the future for the production of a large amount of strategically important PHB polymer in many other plant cells and in large amount.

**PHY-PP-173****Regulation on Functional Food****Sukrit Biswas, Kalpana Thakur, Saurabh Singh, Sachin Kumar Singh, Bimlesh Kumar, Narendra Pandey, Dileep Singh, Neha Sharma and Siddhendu Bhattacharjee**

School of Pharmaceutical sciences, Lovely Professional University, Phagwara, Punjab, India-144411

Shree Baidyanath Ayurved Bhava Pvt. Ltd. Delhi, India

Saurabh.singh@lpu.co.in

The term Functional Food was first introduced in Japan in the mid-1980s and the legislation for functional foods was first implemented as FOSHU in Japan, which stands for 'Foods for Specified Health Use' which refers to the foods that have the property to modulate the body function that contributes to the prevention of a disease. Global regulatory bodies include Codex Alimentarius (Latin for "Food Code"), the World Health Organization (WHO) and the Food and Agriculture Organization (FAO). The International Alliance of Dietary Food Supplement Associations (IADSA) works together with these international organizations. The Dietary Supplement Health and Education Act of 1994 (DSHEA) was directed at ensuring that a dietary supplement is safe before it is marketed in the USA. In 1991, the Japanese Ministry of Health and Welfare (MHW) established the FOSHU labelling regulation. Australia and New Zealand are following The Food Standard Code under the *Legislation Act 2003*. Food and Drugs Act 1985 establishes regulatory authority over food in Canada. In 2006, the European Union adopted a regulation to harmonize across the EU the rules for the use of health or nutritional claims on food products based on nutrient profiles. In India the Food Safety and Standards (Packaging and labelling) Regulations came into effect in 2011. The momentum in Japan seems to be in the right direction providing the rest of the world with an opportune platform for further development.



**PHY-PP-174**

## **ROLE OF PLANTS AS ANTICANCER AGENTS**

**Eyingbeni .T. Odyuo, Chanpreet Kaur, Vandna Kalsi**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

eyingbeni96odyuo@gmail.com

Cancer is the major health problem in both developed and developing countries. Among cardiovascular diseases, nervous system diseases, diabetes, cancer is the most prominent disease in today's time. It is the major cause of death among these diseases. Because of high death rate associated with cancer and the harmful side effects of different therapies that are used for the treatment of cancer like chemotherapy, radiation therapy, many patients seek alternative method of treatment. India has one of the richest sources of medicinal plants, traditionally used in folk medicines. Plants like *Vinca officinale*, *Arctium lappa*, *Hydrastis canadensis*, *Crocus sativus* etc. are used as anticancer plants. Plants have been used for treating diseases since time immemorial. More than 50% of the modern drugs in clinical use are of natural origin. This article gives information on some medicinal plants used for treating various types of cancer. The plant sources of India are likely to provide effective anticancer agents. Various examples of promising bioactive compounds obtained from plants with medicinal and other therapeutic uses have been reported. The phytochemical exploration of these herbs has contributed to some extent in this race for the discovery of new anticancer drugs. In recent years, owing to fear of side effects people have started using natural products for cancer treatment. This article summarizes the diverse methodologies and various ways to evaluate the potential natural compounds having anticancer activity. Although drug discovery from medicinal plant continues to provide an important source of new drugs leads, numerous challenges are encountered including the selection and procurement of genuine plant material.

**PHY-PP-176****Molecular Characterization of Virus(Es) Infecting Citrus Species in Hoshiarpur District in Punjab****Kirandeep Kaur, Dr. Digvijay Singh**

kkaur6363@gmail.com

In the last decade, there has been an explosion in plant virus outbreaks, because of either direct or indirect activities of humans. Psorosis is a disease associated with ringspot symptoms on the leaf of infected plant. We have described the applications of RT-PCR diagnostics to an isolate of Citrus ringspot virus (CtRSV-4) and other virus associated with this disease. Fragments of cDNA from bottom – component RNA of CtRSV-4 were cloned and sequenced. PCR primers were designed, 5'ACAATAAGCAAGACAAC upstream, and 5' CCATGTCACCTTCTATTC downstream. RT-PCR experiments using these primers allowed detection of citrus ringspot virus in infected leaves. Before the RT-PCR method, the 18s RNA is isolated from the infected plant or from plant sample showing symptoms of Psorosis.

**PHY-PP-179****The Comparative Preliminary Phytochemical Screening of Different Extracts of “*Lagerstroemia Flos-Reginae* Retz”****D. Shivani<sup>1</sup>, M. Vineet<sup>2</sup>, S.Jyoti<sup>2</sup>**<sup>1</sup> Department of Pharmacy, Guru Nanak Khalsa College, Yamunanagar, Haryana, India-135001<sup>2</sup> Department of Pharmacy, Maharshi Dayanand University, Rohtak, Haryana, India-124001  
rjsaharan200@gmail.com

*Lagerstroemia flos-reginae* Retz.(Banaba) is cultivated for ornamental purposes and as a roadside avenue tree. The flower of Banaba is the state flower of Maharashtra. It's “flos-reginae” highlights the flower as “Queen among the flowers”. The decoction of its bark is used against diarrhea and abdominal pains. A leaf poultice is used to relief malarial fever and is applied to cracked feet. A preparation of dried leaves is widely used to treat diabetes and urinary problems. The Phytochemical Screening of different extracts obtained by maceration (at room temp, 7 days), Soxhlation (80°C, 20-24 hrs), Microwave-assisted extraction (9 min, P-500W) were performed. The result indicates the presence of phytosterols, terpenoids, alkaloids, proteins, aminoacids, saponins, flavonoids, carbohydrates, and diterpenes.

***PHY-PP-180*****Review on Liquisolid Technique and its Applications in Pharmaceutics****Bhawana, Virender Sachdeva, Naveen Khatri**

College of Pharmacy, Pt. B. D. Sharma University of Health Sciences and Research, Rohtak, Haryana, India-124001

bhawana.jangra94@gmail.com

The vast majority of the newly discovered drug molecules are lipophilic and ineffectively water-soluble. Improving the disintegration and bioavailability of these medications is a noteworthy test for the pharmaceutical industry. The target of this presentation is to demonstrate liquisolid procedure and highlights the advancements of its applications in the pharmacy field. This technique comprises of conversion of powdered drug into apparently dry liquid state, which results in free flowing non-adherent powder that is easily compressible. Easy processing, low cost and unexplored possibilities in production are main benefits of this approach. This technique has been found useful to slow down drug release of water soluble drugs to maintain zero order kinetics and gives sustained release, along with the increased dissolution of poorly water soluble drugs. Some scientists have also reported numerical model articulation to enhance flow properties and hardness of the final product by changing the extent of Avicel<sup>®</sup> PH 200 and Aerosil<sup>®</sup> PH 200 in different proportions. This method has also been utilized for water soluble drugs to develop sustained drug delivery systems using hydrophobic non-volatile solvents.



**PHY-PP-183**

### **Treatment of Cervical Cancer Using Radiation Therapy and M-Tor inhibitors**

**Varsha Kumari**

School of Pharmaceutical Science, Lovely Professional University, Phagwara, Punjab, India-144411

varshaomna02@gmail.com

Cervical cancer is a cancer arising from cervix. It is due to abnormal cell growth in the cervix, which has ability to invade other parts of the body. Women infected concurrently with human papilloma virus. Other type of human papilloma virus are called high-risk types because they are strongly linked to cancers, including cancer of cervix, vulva, and vagina in women. In the early stages of cervical cancer, a person may experience no symptoms at all but later there will be vaginal bleeding, pelvic pain, and bleeding after menopause. Different types of cervical cancer are squamous cell carcinoma and adenocarcinoma. After the stage of cervical cancer, complementary methods are used along with regular medical care. The papanicola smear test can detect abnormal cells in the cervix, including cancer cells and cells which show changes that increase the risk of cervical cancer. Using radiation therapy and m-tor inhibitors, cervical cancer can be treated. Radiation therapy regimen, or schedule, usually consists of specific number of treatments given over a set period of time that combines external and internal radiation treatments. The PI3 K/AKT/m-tor signalling pathway is frequently activated in HPV-positive cervical squamous cell cancer. This study investigated the biological effects of m-tor inhibitors associated with radiotherapy in a cervical cancer. Everolimus, temsirolimus, resveratrol are cytotoxic to HeLa (Henrietta Lacks). Radiation induced a statistically significant supra-additive cytotoxic effect in the cervical cancer cell line when combined with m-tor inhibitors. This research assessed tolerance, local control, and survival outcomes for cervical cancer patient.

***PHY-PP-184*****Floral Medicines: Future of Cancer Treatment****Kunwar Pal, Deepika Purohit**

Department of Pharmaceutical Sciences, Indira Gandhi University, Meerpur, Rewari,  
Haryana, India-123401  
kunwarp1327@gmail.com

Cancer is the second leading cause of death globally. Cancer is actually a group of many related diseases that all have to do with cells. Cancer cells are characterized by unregulated growth. According to WHO, Cancer estimated worldwide new incidence is about 6 million cases per year. WHO says, Globally 1 in 6 deaths is due to cancer. According to American Cancer Society in 2017, there will be an estimated 1,688,780 new cancer cases diagnosed and 600,920 cancer deaths in the US. Chemotherapy remains the principal mode of treatment for various cancers but the side effects and the drug interactions are major drawbacks in its clinical utility. Most of the currently used chemotherapy drugs for cancers are known to develop resistance, exhibit non-selective toxicity against normal cells and restrict by dose-limiting side effects. Hence, development of drugs for this disease remains a major clinical challenge. On the other hand, plants are an exceptionally viable source of biologically active natural products which may serve as commercially significant entities in themselves or which may provide lead structures for the development of modified derivatives possessing enhanced activity and reduced toxicity in treatment of cancer and enhancing the quality of life of cancerous patient. The National Cancer Institute (NCI) has screened approximately 35,000 plant species for potential anticancer activities. Among them, about 3,000 plant species like *Adiantum venustum*, *Alangium salviifolium*, *Allium sativum*, *Cassia fistula*, *Cinnamomum zeylanicum*, *Cleome gynandra* and *Ocimum sanctum* have demonstrated reproducible anticancer activity. Herbal medicines are now attracting attention as potential sources of anticancer agents and are widely used due to availability of the materials, affordability, relatively cheap and little or no side effects, wide applicability and therapeutic efficacy which in turn has accelerated the scientific research. That's why, WHO supports the use of traditional medicines which are efficacious and nontoxic.

**PHY-PP-185****Swerita Chirata- A Magical Traditional Herb with Enormous Medicinal Activities****Rajat Kumar Thakur, Sanjeev Kumar Pal, Ruchi Sharma, Jaspreet Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

Sarkarrajat527@gmail.com

*Swerita chirata* is an indigenous herb found in the regions of higher altitudes. According to charaka, this herb is counted to tukka venus constellation group. The other names are kirrat and chiratta and are bitter in taste. The herb possesses activities to treat problems related to diversified tissues and organs. To brief about some, it has been identified to be an excellent remedy for the strengthening of the digestive system and promoting its action. The major bioactive ingredient of this herb is xanthonenes. The other metabolites are flavonoids, iridoid glycosides and tri-terpenoids, which plays a significant role in various biological activities. Few of the profound pharmacological responses are being found to be hepatoprotective, antihepatotoxic, antileprotic, hypoglycemic, CNS depressant and antimutagenic. The bitterness of this herb is useful to stimulate saliva and gastric juices to stop nausea, indigestion and hiccups. Furthermore, it also helps to treat certain problems like dyspepsia, diarrhea, typhoid fever, ulceration, blood defects, malaria and cough. All such diversified biological effects of a single herb is commendable to recognize. Not only for the usual treatment of acute disorders but, many severe diseases like sciatica and melancholia can also be treated by the drug. Extending further, the natural pharmacy researches are focussed upon identifying the anticancer potential of the drug. Apart from the above mentioned uses, the decoction form of the herb is also reported to be effective in the treatment of skin rashes, burning sensations and itching. Due to the vast applicability of the herb, it is demanded for its gention property which has led to possibility of increased utility of the herb in medicinal science and healthcare system.



**PHY-PP-187**

***Artocarpus Heterophyllus* as a Potent Pharmaceutical Excipient**

**Lavi Kumar Garg, Bhupendra Singh, Sourav Thakur, Ankit Saini**

School of Pharmaceutical Sciences, Lovely Professional University, Jalandhar, Punjab, India-144411

lavigarg10@gmail.com

*Artocarpus heterophyllus* popularly known as Jack fruit belonging to family Moraceae is a fruit having various medicinal uses such as antimicrobial, anti-fungal, anti-cancer, anti-oxidant and anti-inflammatory. It has high levels of starch, protein, calcium and vitamins. Various studies have been performed by extracting the mucilage from the fruit and using it along with the drug by using various methods. As it has rich content of amylose in it, it can be used for the colon targeted drug delivery systems. Mucilage obtained from it is biodegradable in nature, thus will be degraded in the colon by the colonic bacteria, thus leading to the release of the tablet into the colon. Various studies showed that it has a good binding property, disintegrating property and also as a suspending agent. This fruit is found in the Western Ghats and also used in the household for various purposes such as for making pickles and vegetable curry. Its mucilage includes various advantages over the synthetic polymers such as it is non-toxic, economical and easily available.



**PHY-PP-189**

### **Formulation and Evaluation of Post Laser Herbal Cream**

**Sakshi Sharma, Neeru Vasudeva, Sumitra Singh**

Department of Pharmaceutical Sciences, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India-125001

pharma.sakshi8891@gmail.com

Herbal creams offer several advantages over other cream. The purpose of the present research work was to formulate and evaluate post laser moisturizing herbal cream. A moisturizing cream (oil in water) based formulation containing extract namely; *Beta vulgaris* extract (1%) and Liquorice root extract (1%) intended for post laser therapy was developed with an aim to provide moisture and UVA/UVB protection. Post laser treatment was assessed by previously reported Ice bags, menthol packs and stubborn anti-scarring ointment methods. By discovering different types of formulations, such as oil in water, we were able to create several moisturizing creams classified from F1 to F12, by incorporating different concentrations of natural emollients by stirring method. Further the formulated cream was evaluated for various stability parameters. The preparation was stable under normal storage conditions and also passed through different storage conditions at room temperatures; 25°C, 40°C and 2-8°C. The initial physicochemical parameters of formulations i.e. pH was near about 5.8, which lies in the normal pH range of the skin, viscosity, spreadability, extrudability and stability, moisture content, centrifugation, specific gravity were also examined. Herbal moisturizing cream did not produce any skin irritation, i.e. erythema and oedema, when applied on the skin. The cream is for all skin types, especially moderate to dry. It relieved and cooled the treated area. This cream facilitated re-pigmentation by stimulating melanocytic proliferency and removed stubborn scars and wrinkles.

**PHY-PP-190****Plant Extract of *Justicia Gendarussa*: A Potent Inhibitor of Drug -Resistant Hiv-1 Strains****Deeksha**

School of Pharmaceutical Sciences, Lovely Professional University, Jalandhar, Punjab, India-144411  
slagah.2002@gmail.com

HIV and AIDS is a matter of great concern because the number of incidences has increased tremendously over the last ten decades. The human immunodeficiency virus (HIV) is a retrovirus that causes AIDS (Acquired immunodeficiency syndrome) which causes failure of the immune system and increases the risk of opportunistic infections and cancer. Without therapy, the survival rate for a person with HIV infection is estimated to be 9 to 11 years, depending on the subtype of HIV (HIV-1 and HIV-2). India has the third largest HIV occurrence in the world. HIV-1 strains develop resistance to the nucleotide analogue (AZT or Zidovudine) and non-nucleoside analogue (Nevaripine). As HIV replicates in the human body, the virus may undergo mutation and produces variation that lead to drug- resistant strains of HIV. The HIV drugs can't prevent the newly formed drug- resistant strains from replicating. Therefore, drug resistance causes failure of the treatment. *Justicia gendarussa*, commonly known as willow-leaved Justicia, a medicinal plant from Vietnam has been found to be an effective anti-HIV-1 drug. The stems and roots of this plant were extracted to obtain a potent glycoside called as Patentiflorin A. It was found to be much more effective than the clinically used anti-HIV drug AZT and that too in the early stages of infection. It has the ability to inhibit the enzyme reverse transcriptase that is needed by the virus to incorporate its genetic code into the host cell's DNA. Thus, Patentiflorin A has the potential to be developed as a novel drug for HIV treatment.

***PHY-PP-192*****Challenges and Prospects in Herbal Drugs****Raghav Gupta, Kapil Kumar Verma**

I.S.F. College of Pharmacy, Moga, Punjab, India-142001

raghavgupta6791@gmail.com

Herbal medicine and their preparation have been widely used for the thousands of years in developing and developed countries. India is sitting on a gold mine of well recorded knowledge of herbal medicine. In India the Ayurveda is the medicinal system primarily practised from 5000 years that helps in the disease prevention and treatment. Herbal medicines are the synthesis of therapeutic experiences on generation of practising physicians in indigenous systems of medicine for over hundred years. It is also sold as tablets, capsules, powder, teas, extracts, and fresh or dried plants. Herbal medicines are in great demand in the developed world all health care problem because of their efficacy, safety and lesser side effects. The quality control of oriental herbal drug is more difficult than that of western drugs. The quantity and quality of the safety efficacy on efficacy on herbal medicine are far from sufficient to meet the criteria needed to use worldwide. This review article, discusses these constraints and challenge in relation to conservation, science and technology, use of herbal drugs, production, safety, and also the opportunity of herbal medicine all over the world.

***PHY-PP-194*****Role of Herbal Remedies used in Hypertension- A Miracle of Nature****Nitin Sharma, Ajit Singh, Kapil Kumar Verma**

I.S.F. College of Pharmacy, Moga, Punjab, India-142001

nitinsharma19979@gmail.com

Hypertension or high blood pressure (BP) is a chronic medical condition and is a worldwide epidemic and it is an important public-health challenge worldwide. It is basically persistent increase in blood pressure. Prevention, detection, treatment, and control of this condition should receive high priority. Conventional antihypertensives are usually associated with many side effects. According to a WHO report, about 70-80% of the world's populations rely on non-conventional medicine mainly from herbal sources in their primary health care. High percentage of the world hypertensive population use herbal medicines, for primary health care because of their low cost, better acceptability and lesser side effects. Naturally occurring medicinal plants, herbs having antihypertensive potential. There are many herbal drugs like punarnava, barberry, rauwolfia, garlic, ginger, arjuna and many more which can be safely used in treatment of hypertension. However, ayurvedic knowledge needs to be coupled with modern medicine and more scientific research needs to be done to verify the effectiveness, and elucidate the safety profile of such herbal remedies for their antihypertensive potential.

***PHY-PP-195*****Gestational Diabetes Mellitus: Current Scenario****Shabnam Banga, Mukta Gupta, Pardeep Kumar Sharma**

Lovely School Pharmaceutical Sciences, Lovely Professional University, Jalandhar, Punjab, India-144411

shabnam.banga76@gmail.com

Gestational diabetes mellitus (GDM) can be defined as disease in which pregnant women, who have never had diabetes before, have high blood glucose (sugar) or impaired glucose tolerance levels during pregnancy. As per analysis conducted by various associations like American Diabetes Association (7%) and International Diabetes Federation (one in seven), it is reported to have high risk of births with GDM. India, being the second leading country of diabetic subjects (69.2 million), has become the “diabetes capital of the world” harbouring around four million women with GDM alone. As, it increases the risk of complications for both mother and child during pregnancy, and at childbirth and beyond so, immediate management is required for treatment of GDM. Marketed drug available for treatment of GDM includes glynase, metformin, diabeta, fortamet etc. All these drugs are associated with side effects and have contraindication in pregnant and lactating mothers. However, it has been reported that dietary treatment and moderate intensity exercise helps to achieve satisfactory level of blood glucose in 90% of women diagnosed with GDM and 10% require insulin therapy to achieve the recommended glycemic levels. Current data suggests early detection and management of GDM can help to improve or save the life of both mother and child.

**PHY-PP-197****Role of Medicinal Plants in Treatment of Atherosclerosis****Pranav Sharma, Kapil Kumar Verma**

I.S.F. College of Pharmacy, Moga, Punjab, India-142001

pranavsharma367@gmail.com

Since the beginning of the civilization, herbs have been used for medical treatments. Death and morbidity in worldwide has been increased due to the heart disease i.e. Artherosclorsis. It has been ranked as one of the greatest risk factor contributing to the prevalence and severity of conory heart disease. Drugs based on natural products can be a good alternative. The common drugs used in the artherosclerosis revel side effects. Therefore, it is necessary to identify leads from the natural resources. This study overviews the pathophysiology of atherosclerosis and usefulness of medicinal plants present in India for the effective treatment of this condition. In this study, 19 medical plants have been reported to be scientifically effective against atherosclerosis. Artherosclerosis is the heart disease which causes the hardening of the arteries due to the decomposition of the lipids in the arteries. The lipids could be LDL or VLDL. The LDL or VLDL ruptures the intima layer of the artries and get accumulated in the tunica media. This aggrigation cause the hardning in the blood vessel and this LDL or VLDL when aggrigate causes the blockage of the arteries which increases the blood pressure in the arteries. This review article, covers about herbal drugs used in the treatment of atherosclerosis, we have also discussed the cause of the disease and focused on the advantage of herbal drugs over allopathic drugs.



***PHY-PP-200***

## **Registration Procedures for Medicinal Products in US**

**Ritu Dhankar**

rituritudhankar@gmail.com

For the development of new medicinal products, the researcher requires the greater amount of research work in chemistry, manufacturing, quality control, preclinical and clinical trial on the medicinal products. Every country has its own regulatory agency which is responsible to issue guidelines, rules and regulations to regulate the marketing of medicinal product. In the United states (US), for biological products, regulatory agency is centre for biological evaluation and research (CBER) and for drug product, regulatory agency is centre for drug evaluation and research (CDER). Drug reviewers in regulating agency have responsibility of evaluating the research data to determine whether the research data support the safety, effectiveness and quality control of the medicinal product. In this article, we will discuss about regulatory process for approval of medicinal product in USA.

**PHY-PP-201****Ethno, Botanical Phytochemical and Therapeutic Potentials of *Pueraria Tuberosa* (Wild.) Dc - A Well Known Aphrodisiac Drug****Jaswinder Kaur, Charu Khanna**

School of Pharmaceutical Sciences Lovely Professional University, Phagwara, Punjab, India-144411

jaswinderheer70@gmail.com

Traditional system of medicine such as Ayurveda, Unani, Siddha and Chinese has always registered their approach in common population. Different herbs are being used by these systems of medicine for cure of different ailments and maintenance of health standards. A number of active molecules have been recognised and isolated from plant sources which are responsible for their therapeutic actions. One of the perennial climbers, which have been a potential as aphrodisiac and rejuvenator in Ayurvedic system of medicine is Vidarikand (*Pueraria Tuberosa*) belonging to leguminosae family. Many bioactive phytoconstituents has been identified in its tuber such as isoflavonoids (tuberosin, puererin, genistin and daidzein). The plant has been mainly used in conditions such as infertility, cardiovascular diseases, sexual debility, as immunity enhancer and so on. This study focuses on the ethno botanical uses of *Pueraria Tuberosa* along with its bioactive constituents, their role in pharmacological activities in different models investigated till date and its future prospective in health industry.



**PHY-PP-202**

### **Gene Expression and Tissue Culture of Plant**

**Dalip Kumar, Mukta Gupta**

School of Pharmaceutical Science, Lovely Professional University, Phagwara, Punjab, India-144411

dilip1rad@gmail.com

Gene expression is the technique to modify the plant DNA to increase the production of secondary metabolites of the plant, to obtain the desired product of therapeutic mean or to tolerate the plant to certain herbicides or virus resistant. Number of methods has been reported for this, out of which, gene gun and use of plant pathogen is most commonly used due to various applications. Gene gun method involves firing of gold particles carrying the foreign DNA into plant cells where as in case of plant pathogen, disarmed *Agrobacterium tumefaciens* is used to transfer tumor inducing gene to plant. One of the other methods which can be safely employed is plant tissue culture, a technique used *in vitro* to grow plant cells on sterile nutrient media to regeneration of whole plants from plant cells that have been genetically modified. Regeneration can be achieved by propagation from preexisting meristems (shoot culture or nodal culture), organogenesis and non-zygotic embryogenesis. Gene therapy has been successfully used for production of vaccine, protein antibodies, and modified plant products. Along with the same gene therapy can also be used for reducing usage of herbicides and pesticides as it results in genetic modification in plant. Although number of advantages of gene therapy has been reported but it is also associated with few disadvantages such as genetic resistant to pesticide in crops, deteriorating effect on environment. Apart from this, a lot of life saving drugs has been obtained by using gene therapy and is believed that advancement in these techniques is required to overcome these disadvantages and can help to produce a lot of drugs for life threatening diseases such as HIV, cancer, diabetes etc.

**PHY-PP-205****Ayurvedic Formulations for Adjuvant to Chemo-and Radiotherapy of Cancer****Risabet Lamare, Harpreet Kaur, Gopal L. Khatik, Manish Vyas**School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab,  
India-144411

risabet09@gmail.com

Cancer treatments specifically radiotherapy and chemotherapy have been reported as another cause of morbidity and mortality among cancer patients. It is because these treatments are not able to differentiate between healthy human cells and cancerous cells. Therefore, patients are subjected to the adjuvant therapy to avoid the risks of cancer therapies. It leads to the better treatments as well as improvement in the quality of life of cancer patients. Generally, biological response modifiers (BRMs) are used for the adjuvant therapy due to similar characteristics. Recent studies based on herbs considered them as BRMs which may be due to their immunomodulation properties. Besides, Indigenous System of Medicines, there are several formulations reported for immunomodulation and can be used as an adjuvant to chemo- and radiotherapy of cancer. The present review describes the recent studies of ayurvedic formulations including *Indukant Ghrita*, *Rasayana Avleha*, *Triphala Churna*, and *Yastimadhu Ghrita*.

**PHY-PP-206****Silymarin, Olibanum, A Mixed Herbal Formulation in the Treatment of Type 2 Diabetes: A Randomised, Double Blind, Placebo-Controlled, Clinical Trial****Vikas Gupta**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

vikasgupts37@gmail.com

Silybummarianum (milk thistle) seeds and boswellia serrata (olibanum gum) resin which are being used traditionally by Iranian diabetic patients. The main aim of this study is to evaluate the antihyperglycemic effects of these herbal formulations. 60 patients who were diagnosed as type 2 diabetes mellitus were treated with these herbal formulations. Based on fasting blood glucose level from 150-180 mg/dl, glycosylated haemoglobin level from 7.5%-8.5%, and on oral antihyperglycemic drugs, patients were allocated to different groups to receive the mix herbal formulation or placebo for 90 days. Serum fasting blood glucose, glycosylated haemoglobin, and triglyceride levels in the herbal drug group was significantly less than placebo group's values after 3 months of the intervention. Herbal formulation showed an anti-hyperglycemic and triglyceride lowering effect. By this herbal formulation, blood glucose levels of patients were maintained.

**PHY-PP-207****Identification of Possible Molecular Targets of Potential Anti-Alzheimer Drugs by Predicting Their Binding Affinities Using Molecular Docking Technique****Bhupendra Nath Dubey<sup>1</sup>, Roqia Bashary<sup>2</sup>, Neha Sharma<sup>1</sup>, Navneet Khurana<sup>1</sup>, Gopal L. Khatik<sup>1</sup>**<sup>1</sup>School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India- 144411<sup>2</sup>Department of Pharmaceutical Chemistry, Kabul University, Afghanistan  
roqia.bashary@yahoo.com

Alzheimer's disease is neurological; an irreversible, progressive brain ailment in which the death of brain cells arises that gradually abolishes memory and thinking skills, and ultimately the capability to carry out the simplest tasks. In most the people with Alzheimer's, symptoms first appear in their mid-60s. Like all types of dementia, Alzheimer's is caused by brain cell death. According to World Alzheimer Report King's College London found that there are currently about 46.8 million people living with dementia worldwide, with numbers projected to nearly double every 20 years, and proposed to be increasing 74.7 million by 2030. There are currently five drugs approved by the U.S. Food & Drug Administration (FDA) to treat its symptoms like Donepezil, Galantamine, Rivastigmine, and Memantine. In the current work, five novel ligands were selected and then studied to identify possible molecular targets for Anti-Alzheimer's. Among these ligands Galantamine, Donepezil, Etazolate, PBT2, and Scyllo-inositol studied using Autodock Vina molecular docking software which showed the maximum binding affinity to 1W6R by Galantamine whereas others on 1EVE protein with the binding affinity of -10.6, -8.2, -8.0, -5.9 Kcal/mol respectively. Moreover, the comparison was also made with all of the drugs and it was proved that the drug Etazolate, PBT2 and Scyllo-inositol are proposed to be active on acetylcholinesterase target (1W6R and 1EVE protein).

**PHY-PP-209****Bone Marrow Transplantation Improves Survival Rate in Leukemia Patients: A Systematic Review****Parveen Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

parveenkaur1197@gmail.com

Bone marrow transplant is a procedure to replace the damaged bone marrow with the healthy bone marrow stem cells. These cells can be derived from bone marrow, peripheral blood or umbilical cord. It is a new technique to treat cancer like leukemia. Leukemia is a group of cancers that usually begin in the bone marrow and result in the high number of abnormal white blood cells. However, the stem cells are the immortal. It has capability to regenerate themselves. These cell forms the entire human body. There are three types of stem cells: totipotent, pluripotent, multipotent. The totipotent cells can become any cell in the body including placental cells and can divide infinite number of times. Whereas the pluripotent cells can differentiate in to any of the three germs layers: endoderm, mesoderm and ectoderm. It can form every cell of the embryo proper. In leukemia or in haematopoietic stem cell transplant, the multipotent cells are of much concern. As the haematopoietic cells are the multipotent cells and can differentiate in to several types of blood cells like leucocytes, erythrocyte, and thrombocytes. According to the studies, the most of the deaths from leukemia occur in Iraq and the worldwide survival rate is only 26%. Now, the bone marrow transplantation is the major breakthrough in the treatment of leukemia and the survival rate become 62%. Initially, the chemotherapy is only used for the treatment but with the abnormal white blood cells the normal bone marrow cells were also destroyed and the life span of the patient decreased. So now, the bone marrow get isolated from donor by the particular methods and get transplanted in to patient after chemo which gives rise to healthy human cells in the body and hence increase the survival rate of the patient.



## **PHY-PP-210**

### **Microscopical Identification of some Fruits from Cucurbitaceae Family**

**Dahiya Vinesh, Sharma Sunil, and Vasudeva Neeru**

Department of Pharmaceutical Sciences, GJUS&T., Hisar, Haryana, India-125001

vinesh.dahiyampharm@gmail.com

Cucurbitaceae is a large plant family consists of approximately 900 species of which 30 are cultivated for food and medicinal purpose. Family is characterized by trailing vine-like stems and tendrils, especially found in dry and tropical regions. Various morphological features, microscopical characteristics, and biochemical micro and macromolecular markers are commonly studied to identify and authenticate the members of the Cucurbitaceae family. The study enlists the various microscopic features commonly found in fruits of four common plant member of the family viz. *Momordica charantia* (Bitter Gourd-Karela), *Lagenaria siceraria* (Bottle Gourd-Ghia), *Cucumis sativus* (Cucumber-Kheera), *Luffa acutangula* (Ridge Gourd-Tori). The fruits after authentication by taxonomist were studied for their macroscopical and microscopical features. In general the fruits of the family are fleshy berries, larger in size with spherical, elliptical, elongated and unsymmetrical shapes. Fruits are indehiscent in nature generally found to be smooth, warty with fine outgrowths having spots or stripes on their surface. The fruits are differentiated into pericarp, mesocarp and endocarp. Tuberculate emerald green surface with five distinct layers is containing inconspicuous endocarp is characteristic feature of *Momordica*. Pericarp with numerous hairs with thickened and pitted sclerenchymatized hypoderm characteristics help *Cucumis* to prevent water-loss and invasion from fungi. Presence of cuticle and trichome followed by 18-20 layered parenchymatous hypodermis filled with chlorophyll and isolated sclerids and tannin pores are typical features of *Lagenaria*. Radially elongated sclerenchyma under reticulated epidermis with sinuous contour is characteristic feature of *Luffa*. Study was carried out with a vision to setup standards that could be beneficial for detecting the authenticity of these vital medicinal plants.

**PHY-PP-212*****Digitalis Purpurea* (Scrophulariaceae): Herbal Treatment for Chronic Heart Failure****Isha Agrawal, Amrinder Kaur, and Manish Vyas**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

ishaagrwal.agrawal06@gmail.com

Cardiovascular diseases (CVD's) are the prime cause of death globally which are associated with heart and blood vessels, commonly known as heart diseases. Atherosclerosis, ischemic stroke, and heart attack are the common complications of CVD's. Alternative therapies and drugs are being administered to treat congestive heart failure, systolic hypertension, angina pectoris, atherosclerosis, cerebral insufficiency, venom insufficiency, and arrhythmia. *Digitalis purpurea* remains an important therapeutic option for the patients specifically chronic symptomatic heart failure caused by systolic dysfunction. It is commonly known as foxglove whose leaves are medicinally important. This herb from Scrophulariaceae family is found in Kashmir and Nilgiri Hills of India. Digoxin is the main constituent of *Digitalis* which is mainly used for treating heart failure and slowing the heart rate in patients with chronic atrial fibrillation, a type of abnormal heart rhythm. The present article highlights the importance of drug in treating CVDs and its role in current scenario.

**PHY-PP-213****Herbal Drugs as Powerful Remedies for Diabetes****Nikhil Kumar**

Department of Pharmaceutical Chemistry, ISF College of Pharmacy, Moga, Punjab, India-142001

Nikhilkathuria.nk95951@gmail.com

Traditional Medicines derived from medicinal plants are used by about 60% of the world's population. This review focuses on Indian Herbal drugs and plants used in the treatment of diabetes, especially in India. Diabetes is an important human ailment afflicting many from various walks of life in different countries. In India it is proving to be a major health problem, especially in the urban areas. Though there are various approaches to reduce the ill effects of diabetes and its secondary complications, herbal formulations are preferred due to lesser side effects and low cost. A list of medicinal plants with proven ant diabetic and related beneficial effects and of herbal drugs used in treatment of diabetes is compiled. These include *Allium sativum*, *Eugenia jambolana*, *Momordica charantia* *Ocimum sanctum*, *Phyllanthus amarus*, *Pterocarpus marsupium*, *Tinosporacordifolia*, *Trigonellafoenum graecum* and *Withania somnifera*. One of the etiologic factors implicated in the development of diabetes and its complications is the damage induced by free radicals and hence an antidiabetic compound with antioxidant properties would be more beneficial. Therefore, information on antioxidant effects of these medicinal plants is also included.



## **PHY-PP-214**

### **Role of Herbal Plants in the Treatment of Hypertension**

#### **Jyoti Rathi**

Department of Pharmaceutical Sciences, Indira Gandhi University, Meerpur, Rewari, Haryana, India-123401  
jyotirathee.angle@gmail.com

Hypertension (HTN or HT), also known as high blood pressure (HBP), is a long-term medical condition in which the blood pressure in the arteries is persistently elevated. Blood pressure is expressed by two measurements, the systolic and diastolic pressure which are the maximum and minimum pressure, respectively. For most adult, normal blood pressures at rest within the range of 100-130 millimeters mercury (mmHg) systolic and 60-80 mmHg diastolic. When resting blood pressure 130/90 or 140/90 mmHg then prehypertension. Blood pressure is 140-159/90-99 that is first hypertension, blood pressure 160-179/100-109 mmHg that is second hypertension and more the blood from second hypertension then cause hypertensive crises. Acne, body, cholesterol, constipation, cough, dehydration, dry mouth, **blood spots in the eyes, facial flushing** are symptoms of hypertension. The control rates for high blood pressure have actually slowed in the last few years. To check out the blood pressure we use many equipment such as Cuff size, manometer, ultrasonic. The relationship between blood pressure and risk of cerebrovascular disease events is continuous, consistent and independent of other risk factors. The higher the blood pressure is the greater chance of myocardial infarction, heart failure, stroke and kidney disease. For individuals aged 40–70 years, each increment of 20 mmHg in systolic blood pressure or 10 mmHg in diastolic blood pressure doubles the risk of cardiovascular disease. Historically the treatment for what was called the "hard pulse disease" consisted in reducing the quantity of blood by blood letting or the application of leeches. In the late 19th and early to mid 20th centuries, many therapies were used to treat hypertension. To cure the hypertension, we use the many herbal plants like as Round leaf buchu (*Agathosma betulina*),

Pricklycysturd(*Annonamuricata*), **Garlic** (*Allium sativum*), **Oats** (*Avena sativa*), **Breadfruit** (*Artocarpus altilis*), **Celery** (*Apium graveolens*) etc. more than 49 plants are used in treatment of hypertension. Therefore, people who have disease other than hypertension may more benefit from these plants. It seemsthat the medicinal herbs of this study have pharmacological, polyphenols, flavonoids and antioxidant substances that improve blood pressure reduction.

**PHY-PP-215****Preliminary Study of Anti-Oxidant Potential and Gas Chromatography-Mass Spectroscopy (Gc-Ms) Analysis of *Brassica Oleracea*****Neeraj, Shreyasethi, Neeruvadeva**Department of Pharmaceutical Sciences, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India-125001  
neerajpanihar@gmail.com

Medicinal plants being abundant source of bioactive compounds plays an important role in the maintenance as well as improvement of human health. *Broccoli* scientifically known as "*Brassica oleracea var. italica*", a cruciferous green leaf vegetable and has been reported to have an anti-oxidant, anti-inflammatory, antibacterial, anticancer, antiatherosclerotic, antimucolytic, antinitrosaminic, anti-nyctalopic, anti-proliferant and hypocholesterolemic potential. Phytochemical screening of the flower extract was performed. Evaluation of the *in vitro* antioxidant efficacy of the extract of '*Brassica oleracea*' was done by 1,1-diphenyl-2-picrylhydrazyl (DPPH) scavenging assay and ferrous ion-chelating ability assay. Gas chromatography-mass spectroscopy (GC-MS) studies were undertaken to assess the phytochemical composition of the flower extract. Phytochemical screening revealed the presence of terpenoids, alkaloids, tannins, steroids, and saponins. A significant inhibitory effect of extracts on DPPH ( $IC_{50} = 0.070 \pm 0.67$  mg/ml) was comparable with that of ascorbic acid ( $IC_{50} = 0.045 \pm 0.61$  mg/ml and butylated hydroxyl toluene (BHT) ( $IC_{50} = 0.118 \pm 0.53$  mg/ml). The highest chelating activity of methanol extract and EDTA was found to be 83.69% and 98.91%, respectively at concentration 50 mg/ml. GC-MS analysis report confirmed the presence of hexadecanoic acid, phytosterols, linoleic acid, palmitic acid and oleic acid as major constituents and vitamin E, furanone as minor compounds. In traces, terpenoids, squalene, and geraneols were also found. These data suggests that *B. oleracea* is a potential source of plant-based therapeutics and also a natural source of antioxidants. The extracts contain significant amounts of phytochemicals with antioxidative properties which could act as inhibitors or scavengers of free radicals. From this study, we got a sound base for further investigation of *B. oleracea* for its pharmaceutical application.

**PHY-PP-216****Natural Polyphenols Potential in the Prevention of Sexually Transmitted Viral Infections****Aman Jaswal**

School of Applied Medical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

jaswal.aman.040@gmail.com

According to the data of World Health Organization, currently sexually transmitted infections are one of the major health problems worldwide. As the data estimation by WHO, 1 million individuals are being affected with sexually transmitted infections (STIs) every day. This is due to the lack of effective prevention strategies. After the long-time efforts of healthcare professional, some new type of naturally obtained, polyphenols are coming in the health care sector. In this review, we discussed about the potential of natural polyphenols for the prevention of sexually transmitted disease. This review gives an account to highlight the potential of natural polyphenols (epigallocatechin gallate, theaflavins, resveratrol, genistein, curcumin) for the prevention of sexually transmitted disease that is caused by viruses: HIV(human immunodeficiency virus), HSV (herpes simplex virus) and HPV(human papilloma virus).

**PHY-PP-217****Optimization of Bio-fuel Production from Non-Traditional Bio-wastes****Neha Thakur, Shashank Garg**

Lovely Professional University, Phagwara, Punjab, India-144411

tneha3334@gmail.com

There is need of Bio-fuel production because of increase of carbon dioxide concentration in the environment and the other green house gases. As the agricultural practices is considered as the good source of energy for the production of biomass which can be measured as Bio-fuel and as in renewable form of energy source. The main importance of Bio-fuel is that as there is increasing use of energy or climate change due to emissions from fossil fuels, Bio-fuel is considered as renewable and non-toxic in nature which is totally dependent on its production. For the development, energy was considered as essential and major source. This work has focused on the potential of the potato peel use (PPW), a zero-value waste as feedstock for bioethanol production. PPW contain sufficient quantities of starch, cellulose, hemicellulose and fermentable sugars to make it use as an ethanol feedstock. In this, a number of batches of PPW were hydrolyzed with acid (HCL) and alkali (1% and 5%) treatment ( $H_2SO_4$ ) and fermented by *Saccharomyces cerevisiae* to determine fermentability and ethanol production. In this, through alkali hydrolysis method total reducing sugar estimation is done under UV –Vis spectrophotometer and standard curve is being plotted and then ethanol is produced after fermentation. The results demonstrate that PPW, a by-product features a high potential for ethanol production.

**PHY-PP-222****Comparison of DPPH and ABTS Assay for Determining the Antioxidant and Antibacterial Potential of five Varieties of *Moringa Oleifera* L.****Bilques Farooq, BhupendraKoul**

School of Bioengineering and Biosciences, Lovely Professional University, Phagwara, Punjab, India-144411

bhupendra.18673@lpu.co.in

*Moringa oleifera* is a multipurpose plant which has several nutritional, therapeutic and economical uses with manifold health benefits. It is considered as miracle tree to combat malnutrition among the young populations of the world who are devoid of daily nutritious diet. It is an excellent source of phytonutrients and possess antioxidant, antibacterial, antifungal, antiinflammatory, antipyretic, antitumour, anticancer, antidiabetic, antiulcer and antihypertensive properties. In the present study, methanolic leaf extracts of *M. oleifera* varieties, 'PKM-1' (Periyakulam-1), 'PKM-2' (Periyakulam-2), 'Jaffna', ODC and 'Conventional' has been used to analyse the free radical scavenging effect on DPPH (2, 2-diphenyl-2-picryl hydrazyl) and ABTS (2, 2-azinobis,3-ethyl-benzothiazolin-6-sulfonic acid). The trend observed in both the DPPH and ABTS assays is Conventional > ODC > PKM-1 > PKM-2 > Jaffna. While the trend observed with total phenolic content (TPC) and total flavonoid content (TFC) values is, Jaffna > PKM-1 > PKM-2 > ODC > Conventional. The antibacterial activity (disc diffusion method) of the aqueous, methanolic and ethanolic leaf extract of these three varieties on *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis* and *Staphylococcus aureus* showed a trend of Jaffna > PKM-1 > Conventional; Jaffna > PKM-1 > Conventional, and Jaffna > PKM-1 > Conventional respectively. **Conclusion:** A comparative analysis of the antioxidant and antibacterial activities reveals that Jaffna variety exhibits a strong antioxidant activity, has the highest TPC and TFC and a reasonable antibacterial activity. Thus, the Jaffna variety can be suggested for the reforestation program and shall be an alternative source of income to the farmers in Punjab.

**PHY-PP-223****Epilepsy: A Review of Reports and Models for Provision of Care for Patients with Epilepsy****Sonia, Anju Dhiman, Govind Singh**Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001  
spharma004@gmail.com

Epilepsy is common and has a variety of causes and associated pathologies. Increased understanding of the pathophysiology underlying the epilepsies and advances in classification, diagnostic imaging and drug treatments have led to a reduction in stigma and growing demand for services to be improved for patients. Animal models of seizures and epilepsy are essential for the search of new effective antiepileptic drugs. The major advantage of these naturally occurring epilepsies in animals as models of human epilepsy is that they simulate the clinical situation more closely than any other experimental epilepsy. These models can be either mechanism specific, seizure specific or mechanism independent seizure specific. To be predictive of therapeutic activity in patients, the models should approximate the events that precipitate seizures in humans. Mechanism-independent models were used to detect the first antiepileptic drugs [AEDs; e.g., phenobarbital (PB) and phenytoin (PHT)]. Two concepts assumed are: either seizure spread or seizure threshold affects. When animal models were developed that used electrical stimulation or chemo-convulsants, they were systematically validated using the then-known clinically effective compounds. The pharmacologic action of the potential anticonvulsant drugs then outlined to predict their utility in the various types of human epilepsy. The therapeutic activity as well as the toxicity of these new drugs then demonstrated in various animal models and species. The utilization of different animal seizure models has been critical for identifying many of the newly marketed antiepileptic drugs (AEDs). The full pharmacologic–anticonvulsant profile of a potentially useful new therapeutic agent is required to ensure successful development.



**PHY-PP-224**

### **Treatment of Rheumatoid Arthritis by Herbal Drugs and their Components**

**Srishti Choudhary, Pardeep Kumar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

srishti1203@gmail.com

Rheumatoid arthritis (RA) is a multifaceted auto-immune disorder, which leads to localized erosion characterized by chronic inflammation of the joints and progressive cartilage and bone demolition. It is a debilitating disease which affects people of all age. However less than 2 percentages of the populations in world suffer from rheumatoid arthritis still the therapy given to the patient gives symptomatic relief and recovery from it cannot be predicted. This is because of the progressive nature of the disease additional articular difficulties will happen in different organ frameworks. Epidemiology is 0.5 to 1 % adults are gets affected by it but it is more common in women than man. Different risk factor is there like genetic, environmental and our life style. Over the previous decade, the management of RA has advanced with malady changing antirheumatic agents with biologic action focusing on particular segments of the immune system. With cutting edge treatment, management incorporates halting the further development of the infection and keeping up personal satisfaction. In any case, most prominent weakness in the current treatment is available potent drugs having toxicity and reappearance of symptoms after discontinuation. Due to cause of limitation in medication and existing drug molecule herbal drug gaining interest of RA patient. The substance coumarin obtains from the bark of butterfly tree (*Bauhinia purpurea*) and tonka bean which show anti-rheumatoid action. Coumarin mechanism of action is carbonic anhydrase inhibitor and it inhibits carbonic anhydrase (iii) and carbonic anhydrase (iv). It inhibits interconversion between carbon dioxide and bicarbonate ions and it directly act on cytokines. It prevents damage of cartilage and osteoclasts. Rheumatoid arthritis is one of the priority condition covered by WHO. This is the over view about the diseases rheumatoid arthritis, their risk factor, cause and potential herbal treatment.

**PHY-PP-225****The Role of Phytomedicine in the Management of Asthma****Jatin, Jyoti Rathi**

Department of Pharmaceutical Sciences, Indira Gandhi University, Meerpur, Rewari, Haryana, India-123401  
jj8816910722@gmail.com

Asthma is a chronic inflammatory disease of the airways that may lead to limitations in regular activities and a decrease in quality of life. In India, asthma-like symptoms were called (TamakaSwasa). The symptoms are shortness of breath, chest tightness or pain, cough, wheezing, difficulty in breathing etc. Asthma problem can occur due to smoking, exposure to exhaust fumes or other types of pollution, stress, cold air, respiratory infections also. Treatments available to patient include anti-inflammatory therapies, bronchodilators and inhaled corticosteroids. Conventional treatment for allergic asthma include steroids, leukotriene antagonists, bronchodilators and most recent anti IgE antibody. Overuse of some therapies can induce adverse effects in some patients such as increased risk of developing pneumonia and cardiac co-morbidities. The use of medicinal herbs can reduce adherence to prescription, as the medication maybe replaced by herbal products. One such area showing good promise in providing an alternative or add-on therapy is that of phytomedicine. Phytomedicine is defined as a plant-based traditional medical practice that uses various plant materials in modalities considered both preventive and therapeutic. Herbal remedies for asthma are laurel (bay laurel), garlic, mallow, mint, thyme, onion, tea etc. A plant called Ma-Huang was used to treat a variety of ailments, especially breathing trouble. This review focuses on recent human clinical trials using plant-based medicines for the treatment of asthma.



***PHY-PP-226***

**Brivaracetam in Treatment of Patients with Epilepsy**

**Ankush Sharma**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

sharmaankushsharma9090@gmail.com

An epileptic seizure is a transient occurrence of signs or symptoms due to abnormal excessive neuronal activity in brain. Levetiracetam has been used since very long to treat epileptic patient but there is problem with this medication is that patient suffers from mood issues. Brivaracetam is being used by epileptic patients since 2016 and it seems to be safe, easy and effective option. Brivaracetam broadens the therapeutic spectrum. Brivaracetam is a high affinity ligand for synaptic vesicle 2a (sv2a) with 15 to 30 folds higher affinity than levetiracetam. It has been approved by the US Food and Drug Administration (FDA) for treatment of focal seizures.



**PHY-PP-227**

### **Therapeutic use of Vasaka in the Treatment of Bronchial Asthma**

**Suleiman Muhammad Sani**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India- 144411

muhdsule6556@gmail.com

Bronchial asthma is a chronic inflammatory disease of the airways characterized by bronchial hypersensitivity and variable degree of obstruction. It is common and prevalent worldwide. There is no age bar for it, but nearly 50% of cases develop before the age of 10 years and mostly before the age of 30. According to World Health Organization, it is currently affecting 235 million people worldwide. It is believed that asthma occurs through a combination of genetic factors and environmental exposure to allergens and irritants. In case of genetic factors, it is generally seen that family of asthmatic parents has a much higher chance of being asthmatic. It is also high, when there is a family history of allergic disease such as rhinitis and eczema. In the case of environmental factors, substances such as dust, mites, feathers, pollen, molds, pet dander, exposure to dry wind, cold air or sudden change in weather, aspirin and other related drugs, and respiratory infections brought on by the different viruses can cause asthma. For all such kinds of patients, quick-relief medications are required. The intensity of treatment depends on the severity of symptoms. Vasaka (*Adhatoda vasica*) is a medicinal plant used for cough, asthma, breathing trouble, nasal congestion, bleeding disorder, allergic condition, and upper respiratory infections. It also has anti-bacterial, anti-oxidant and anthelmintic action. It possesses anti-inflammatory activity, i.e. it helps in asthma and reduces inflammation of the airways and lungs. Vasicine is the active compound which is responsible for its bronchodilator action, i.e. it eases the breathing process and reduces wheezing due to asthma. Thus, it can be used as a potential therapy for the treatment of asthma.

**PHY-PP-228****Alcoholic Extract of Tulsi Leaves for Treatment of Breast Cancer****Sanjeev Kumar Pal, Rajat Kumar Thakur, Ruchi Sharma, Jaspreet Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

Sanjeevpal141015@gmail.com

Cancer is a disease which has spread universally and is affecting a major population. Specifically, breast Cancer is the second major leading cause of death of female worldwide after Heart Diseases. The statistics has depicted that in year 2012 alone, around 1.7 million new cases of breast cancer were diagnosed throughout the world and the count is increasing every year which has reached to an alarming level. Breast cancers are of two types namely, ductal carcinoma (which begins in the lining of milk ducts) and lobular carcinoma (Which begins in the lobules of the breast). Although great advancements have been made in the treatment of cancer through allopathic drugs but, due to the adverse effects of these drugs, there is always a search for the herbal therapy, which is preferred over the consumption of chemical synthetic moieties. Therefore, the need is there to identify and implement use of effective herbal drugs which can provide efficient therapy with reduced side effects. *Ocimum sanctum* belonging to the family of Lamiaceae, commonly known as “Tulsi” has been identified to possess anticancer property against breast cancer. Its alcoholic extract contains active constituents such as eugenol, orintin and vicienin. Eugenol is responsible for the anticancer property of the herbal drug by inhibiting the growth of ALDH positive breast cancer stem cells and NF-kB signalling pathway. The steps involved in deriving the active constituents and formulation into dosage form includes: the alcoholic extraction of active moiety from Tulsi leaves, compound isolation, identification of bioactive compound and formulation in suitable dosage form. The experimental studies on the herbal compounds have reported the significant anticancer effect when administered orally (200mg/kg p.o.). Therefore, if the therapy gets utilized successfully, it can immensely affect and improve the survival rate of patients suffering from breast cancer.

**PHY-PP-231****Comparative Analysis of Biochemical Composition, Antibacterial, Antifungal and Antioxidant Properties of Seed Extracts Derived from *Syzygium Cumini* and *Nigella Sativa*****Anupam Kumar, Saikat Chatterjee, Dipjyoti Majumder, Digvijay Singh**

Department of Biotechnology, School of Bioengineering and Biosciences, Lovely Professional University, Phagwara, Punjab, India-144411

anupam.kumar167@gmail.com

*Syzygium cumini* (*S. Cumini*) is commonly known as black plum or jamun and *Nigella sativa* (*N. sativa*) commonly known as Kalonji. These plants product are used in the treatment of various diseases since long time as folk medicines. *S. cumini* is known for its effectiveness in the treatment in diabetes mellitus, inflammation, ulcers and diarrhoea. The seeds are generally claimed to have alkaloid, jambosine and glycoside jambolin, which helps in halting the conversion of starch into sugar. *N. sativa* mainly contains nigellone, dithymoquinone, thymoquinone, thymol and thymohydroquinone. In the current study, biochemical evaluation, antioxidant analysis, antifungal and anti-bacterial activity of seed extracts of *S. cumini* and *N. Sativa* have been observed. Qualitative analysis of alkaloids, flavonoids, saponins, sugar, proteins, and lipids were performed by standard methods. For functional group presence, FTIR and HPLC were performed. The biochemical tests were done to check the antioxidant activity of ferrous ion. DPPH test done shown that the extract contains polyphenolic compound that might be the reason for the high antioxidant activity. The FTIR spectrum indicates the contribution of amine, nitriles and carbonyl group respectively in the phytoconstituents derived from seeds of *S. cumini* and *N. sativa*. HPLC study revealed the presence of gallic acid in the extract with some other phytoconstituents, which are potent antioxidant and also responsible for antibacterial and antifungal activities. Antibacterial and antifungal activities of ethanolic, methanolic and aqueous extracts were analyzed by disc diffusion method. Findings of current study suggest that the extract derived from seeds of *S. cumini* and *N. sativa* have antioxidant, antibacterial and antifungal properties, further these extract can be explored for *in-vitro* study for anticancerous, antitoxic effects and *in-vivo* immunomodulation studies because it has antioxidant properties, it can be also exploited for green drug development and as dietary supplement.

**PHY-PP-232****Green Tea Catechins as A Natural Antioxidants having Role in Prevention of gastrointestinal Tract Disorders****Diksha, Sazal Patyar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

diksha306557@gmail.com

Green tea (*Camellia sinensis*) is rich in catechins, among which epigallocatechin-3-gallate (EGCG) is the most abundant. Studies have shown that catechins possess diverse pharmacological properties that include anti-oxidative, anti-inflammatory, anti-carcinogenic and anti-bacterial effects in the gastrointestinal tract disorders. It is well known that green tea catechins are potent antioxidant with anti-oxidative activity greater than vitamins C and E. Besides, it acts as a scavenger for reactive oxygen and nitrogen species. They also enhance expression of intracellular endogenous antioxidants such as glutathione reductase, glutathione peroxidase, glutathione-S-reductase, catalase, and quinone reductase. All of these activities prevent lipid peroxidation and damage to the DNA structure. These catechins also bind to metal ions and further reduce the generation of reactive free radicals. In limiting the formation of carcinogens, catechins have been shown to promote the elimination of procarcinogen, e.g., polycyclic hydrocarbons and heterocyclic amines, from the body by inducing phase I cytochrome P450 and phase II detoxification enzymes. They show chemopreventive effect by inhibiting cell proliferation as well as angiogenesis and stimulate cell cycle arrest. These catechins are potent inhibitor of inducible nitric oxide synthase and cyclooxygenase-2. In suppressing the release of nitric oxide and prostaglandins, which are important mediators for inflammation and tumorigenesis, green tea can limit inflammatory reactions and promotion of cancer. As tea catechins are well absorbed in the gastrointestinal tract and they interact synergistically in their disease-modifying actions, thus, drinking unfractionated green tea is the most simple and beneficial way to prevent gastrointestinal disorders.



**PHY-PP-233**

### **Advanced Wound Dressings from Natural Sources**

**Rohit Kumar, Reena Gupta**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

Rohit.kumar88701@gmail.com

The largest and outermost organ that covers the entire body is the skin. Skin's primary function is to protect underlying organs from external agents. Skin is also involved in sensation, temperature regulation, immunological and prevention of water loss. But, the structure and functions performed by skin can be affected by cuts, burns, surgical incisions or illnesses, such as diabetes. In some cases, the wounds can easily be contaminated. Chronic wound infection is a significant medical burden for the patients that subject the patients to severe discomfort and distress. Conventional remedies like antibiotics and wound dressings used for management of wound infections are associated with side effects like resistance, inadequate moisture content and cost. This led to the development of advanced technologies for designing the wound dressings. Various nanoparticles are used in these advanced wound dressings like calcium, zinc oxide, silver and gold due to their therapeutic benefit. These nanoparticles based advanced dressings are also associated with drawback like biochemical processes used for their synthesis involve the usage of hazardous reducing chemicals. The need of the time is to formulate a wound dressing devoid of potential adverse effects. From the ancient times, various medicinal plants have been used for the treatment of chronic wound infections. Here we have presented the advanced wound dressings that are incorporated with natural agents. The discussion also includes the available advanced wound dressings for various infections.



***PHY-PP-234***

### **Regulations on Pharmacovigilance of Medicinal Plant Products in India**

**Preeti, Pooja Rathee**

Department of Pharmaceutical Sciences, M.D. University, Rohtak, Haryana, India-124001  
saini2preeti@gmail.com

Adverse Event caused in one of the potential concerns of public health which requires continuous recording, evaluation and monitoring. Substantial regulatory arrangements provide the foundation for a national method of medicine safety, and for public confidence in medicines. A majority of the adverse events related to the use of herbal products and herbal medicines that are reported are attributable either to poor product quality or to improper use. In order to reduce the risks, pharmacovigilance study is becoming essential in analyzing adverse events. On the other, pharmacovigilance plays pivotal role in ensuring the ongoing safety of medicinal products. World Health Organization (WHO) in India is therefore encouraged to strengthen national regulation, registration and quality assurance and control of herbal medicines. Safety monitoring of medicinal products, guideline for setting up and running a pharmacovigilance center and collaboration between the health authorities for the risk assessment of medicinal plant product are the key factors that are needed to implement in India. In addition, the national health authorities should give greater attention to consumer education and to qualified practice in the provision of herbal medicines.



***PHY-PP-235***

### **Micromorphology of Plants**

**Pratibha Sharma, Pinki Phougat, Meenu, Neha Sharma**

Department of Pharmaceutical Education and Research, BPSMV, South Campus, Bhainswal Kalan, Sonapat, Haryana, India-131001

partibha10@gmail.com

Morphology compares the same and similar types of plants at micro and macro levels, and analyzes their tissues, and external structures, somatic and germ cells via electron microscope to study their development, growth, and their origins while taxonomy is the branch of science that categorizes the living beings according to their genetic, morphological, or other characteristics. Micro-morphological studies on plants enable micro-level analysis of pollens, leaves, tissues, and seeds of plants with the help of electron microscopy. There are two types of electron microscopes used for micro-morphological studies and to identify the species systematically which are Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM). SEM provides high zoom via high resolution imaging techniques. Therefore, it is possible to obtain morphological, structural, and elemental information from the plants at high zoom levels, whereas, TEM is a technique in which a beam of electrons is transmitted through a specimen to form an image at high resolution. Micro-morphology plays an important role in taxonomy of plants. Micro-morphology studies give the detailed information and reference for the taxonomic description of plants and are useful to distinguish and identify the current species while detecting the new species and taxonomy.

**PHY-PP-238****A Review on Prevalence, Diagnosis, Pathogenesis and Treatment of Fatty Liver Disease and Obesity****Mohit**

Lovely Professional University, Phagwara, Punjab, India-144411

Mohitpuri550@gmail.com

The global increase in the prevalence of obesity has heralded a rise in associated liver injury namely NAFLD (non-alcoholic fatty liver disease). This review is prepared using authentic search engines like, Google Scholar and Pubmed, thus retrieving the current information and approved therapies. It is estimated that 20–30% of adult populations in developed countries have NAFLD and, although high quality data is currently lacking, the condition is clearly increasing in children also. NAFLD should be suspected in those with commonly available simple clinical signs and biochemistry consistent with insulin resistance. A small number of individuals with NAFLD, often considered a relatively benign condition, will progress to more severe stages of liver disease including NASH (non-alcoholic steatohepatitis) with or without fibrosis, cirrhosis and occasionally hepatocellular carcinoma. NAFLD is also commonly associated with an increased risk of developing Type 2 diabetes and treatable features of insulin resistance such as dyslipidemia and dysglycaemia. Histological examination of liver tissue remains the only proven method to distinguish between simple steatosis and NASH, a condition far more likely to progress to cirrhosis. Identification of an imaging technique or non-invasive marker to achieve this distinction is therefore much sought after and would allow larger clinical trials and better clinical assessment. Case series and pilot studies of lifestyle advice, insulin sensitizers and other medications have shown improvements in liver histology and serum liver enzymes but robust randomized controlled studies are needed. Furthermore, the cost/benefit ratio of any new therapies, and any potential harms, must be evaluated carefully before being clinically advocated.

**PHY-PP-239****Preliminary Screening of Preparation Techniques for Generation of Co-Crystals of Curcumin****Sananda Som, Jivan Jyoti, Sovik Mohanta, Sachin Kumar Singh, Gopal L. Khatik, Bhupinder Kapoor**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

sanandasom92@gmail.com

The objective of the present study was to investigate the best techniques for the preparation of curcumin co-crystals. Liquid-assisting grinding co-crystallization (small amount of solvent is used as a catalyst) as well as solid-state grinding method (no use of solvent system) were used for the preparation of different co-crystals forms of curcumin. In both methods, equivalent quantity of curcumin and different co-formers (gallic acid, malonic acid, stearic acid, benzoic acid, salicylic acid, oxalic acid, maleic acid, l-tartaric acid, succinic acid) were taken in different molar ratios to form co-crystals. A ternary phase system was prepared using curcumin, succinic acid, and beta-cyclodextrin, where beta-cyclodextrin was used as a complexing agent. Obtained, solid products were filtered through Whatman filter paper and dried at 40<sup>0</sup> C. Characterization and evaluation were done through pre-formulation studies, optical microscopic studies, and dissolution studies. Nine different forms of co-crystals containing curcumin were formed using different co-formers. The result showed that solubility was obtained for the co-crystals with molar ratio 1:2:1 of curcumin; succinic acid; beta-cyclodextrin. The solubility of this co-crystal was found to be higher than that of pure curcumin. The ternary phase system with beta-cyclodextrin as the third component helped to find out the best composition, to enhance the solubility as well as dissolution profile of curcumin.

**PHY-PP-241****Isolation and Therapeutic Role of Cannabinoids from *Cannabis Sativa* in Medicinal Plant Biotechnology****Nishant Mehta, Manish Vyas**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

nishantkushmehta@gmail.com

Medicinal plants are the most important source of life saving drugs for the majority of the world's population. The biotechnological tools are important to select, multiply and conserve the critical genotypes of medicinal plants. Biotechnological tools are important for multiplication and genetic enhancement of the medicinal plants by adopting techniques such as *in-vitro* regeneration and genetic transformations. *Cannabis sativa* (Cannabaceae) is an important medicinal plant that serves as a source of Cannabinoids, a unique class of terpenophenolic compounds which accumulates mainly in the glandular trichomes of the plant. Phytocannabinoids have been isolated from *C. sativa*, the major biologically active compound being tetrahydro cannabinol, commonly referred as THC. Besides psychoactive, THC possesses analgesic, antiinflammatory, appetite stimulant, and antiemetic properties. Cannabinoids are very promising therapeutic agent especially for cancer and AIDS. This study involves the role of biotechnology and methods to propagate *Cannabis sativa* for the production of phytocannabinoids. This includes, screening of high yielding genotypes based on their chemical profile, propagation of these genotypes using biotechnological tools, comparison of micropropagated plants with the mother plants for consistency of chemical and genetic profiles and the utility of micropropagation in the conservation of elite clones for future use.

**PHY-PP-242****Design, Formulation and Pharmacokinetic Evaluation of Bilayer Tablet of Fexofenadine Hcl and Montelukast Sodium****Sourav Thakur, Bhupendra Singh, Vijay Mishra, Bimlesh Kumar, Surajpal Verma**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

souravthakur1616@gmail.com

The present investigation is to design, formulate, and evaluate bilayer tablet of Fexofenadine HCl and Montelukast sodium. Design Expert software was used to obtain runs for batches to be prepared for the immediate release and sustained release layers. Box-Behnken design was used. Based on the runs, Fexofenadine HCl (F1 to F13) and Montelukast sodium (F1 to F13) tablets were formulated as immediate and sustained release layer, respectively. Fexofenadine HCl layer was formulated as immediate release layer by using sodium starch glycolate as superdisintegrant and sodium bicarbonate as effervescent agent. Montelukast sodium layer was formulated with HPMC E15LV as matrixing agent. The immediate release layer was tested for % drug release after 45 minutes and disintegration time, while the sustained release layer was tested for hardness and percentage drug release. A total of 13 runs were obtained for each layer. For immediate release layer, F4 gave the best results with a disintegration time of 17 seconds and 86% drug release within 45 minutes, while F11 of sustained release layer gave a hardness of 3.2 Kg/cm<sup>2</sup> and 94% release after 10 hours. The prepared formulation successfully provided drug release for a period of 10 hours. Thus, a bilayer tablet was formulated for the treatment of nocturnal asthma that provides drug release when the symptoms of asthma are exacerbated. The formulation holds great promise in curbing nocturnal asthma symptoms and increasing patient compliance. The tablets are to be taken at bed time and the patient does not have to wake up at night to take medications.

**PHY-PP-243*****Terminalia Bellirica* (Bahera): A Proficient Drug for Treatment of Heart Diseases****Karamdeep Singh, Ruchi Sharma**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab-144401

Karamdeep000@gmail.com

Cardiovascular diseases like ischemic stroke, Congestive heart failure, arrhythmias and other group of associated disorders have created an alarming state and challenge for the healthcare system worldwide. In response to the condition, many of the drugs are been employed continuously as the part of the therapy for prolonged usage. But, as per the clinical responses the overall outcome of these therapies lead to manifested side effects and sometimes even the adverse effects. So, in order to counter the quandary, a wide array of plants are incessantly been distinguished by the herbal scientists based upon the prospective to serve the purpose of offering efficient treatment with lesser unwanted effects. One such plant with the biologically active compound for treatment of heart diseases is *Terminalia belerica*, belonging to the family *Combtraceae*. Diversified examinations on the plant and its chemical constituents have demonstrated the presence of various activities which includes: antioxidant ability, antidiabetic activity by reducing serum glucose level in diabetic rats. Terminalia contains 3,4,5- trihydroxy benzoic acid (Gallic acid) which demonstrate the hepatoprotective action of extract of the plant. The presence of another constituents like triterpenoids, carbohydrates, tannis and proteins are responsible for the analgesic activity in chronic pain and reduced the level of bilirubin. Furthermore, the organic product concentrate of this medication has been assessed to defy mutagenic effects, tender antimicrobial activity and hostility to HIV movement. Comparing to other effects, the plant holds great potential to provide profound effects in treatment of Heart problems by lowering the cholesterol level of body resulting in reduced chances of atherosclerosis and myocardial infarction. Due to the high efficacy and low toxicity of *Terminalia bellirica*, it can be researched further to be the major active accessible and economical traditional medicine for the treatment of cardiac disease in developing countries.

**PHY-PP-245****Surface Engineered Carbon Nanotubes: An Emerging Horizon in Oncology****Bushra Riyaz, Vijay Mishra**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

riyazbushra786@gmail.com

Carbon nanotubes (CNTs) are promising versatile cargoes in the field of nanomedicine, utilized primarily in oncology for targeting cancer stem cells (CSC). The conventional nano carriers have few limitations, such as inappropriate availability of surface-chemical functional groups for conjugation, low entrapment/loading efficiency as well as stability as per ICH guidelines with generally regarded as safe (GRAS) prominences. Surface engineered carbon nano tubes (SE-CNTs) have appeared as an intriguing nano-technological tool for numerous biomedical applications including biocompatible modules for the bioactives delivery ascribed to their unique properties, such as greater loading efficiency, biocompatibility, non-immunogenicity, high surface area and photoluminescence, that make them ideal candidate in pharmaceutical and biomedical sciences. Numerous approaches are used to fabricate functional composite materials for achieving numerous applications including electronics, electrocatalysts and electromechanical sensors. The design of multifunctional CNTs for drug delivery and targeting may differ from the conventional drug delivery system. Attributing to the diverse surface chemistry and characteristic thermal properties of SE-CNTs, the method of laser-mediated eradication of cancerous cells manifested by incorporating biofunctionalized CNTs/ SE-CNTs is commonly termed as “nanophotothermolysis”.

**PHY-PP-246****Status on Clinical Trial Registration and Regulation of Traditional and Ayurvedic Medicines****Sandeep**

M.D. University, Rohtak, Haryana, India-124001

sandeepmparmacy@gmail.com

Traditional medicines (TM) and Ayurvedic medicines are of great importance. Such forms of medicine as traditional medicine, Ayurveda, and Unani and have blossomed into orderly-regulated systems of medicine. TM is used in the prevention and treatment of physical and mental illnesses. TM is also variously known as complementary and alternative, or ethnic medicine. Indian System of Medicine is Ayurveda, Siddha, and Unani. Registered Medical Practitioners as person is practicing the modern scientific system of medicine under the Drugs and Cosmetics Rules, 1945. A separate Department of Indian Systems of Medicine and Homoeopathy (ISM&H) was set up in 1995 to ensure the optimal development and propagation of AYUSH. The Department of ISM&H was re-named as the Department of AYUSH (for- Ayurveda, Yoga and Naturopathy, Unani, Siddha, Homoeopathy) in Nov. 2003. The Department of AYUSH under Ministry of Health and Family Welfare, promotes and propagates Indian systems of Medicine and Homoeopathy, and is committed to infuse the wisdom of traditional medicine with the methodologies of modern science. Ayurveda is science of life (Ayu+Veda) that takes an integrated view of the physical, mental, spiritual and social. Ayurveda was referred to in the Vedas (*Rigveda* and *Atharvveda*) and the knowledge of Ayurveda was comprehensively documented in Charak Samhita and Sushruta Samhita. During recent years, Kshar Sutra and Panchkarma have become more popular among the public. Panchakarma is a unique therapeutic procedure for the radical elimination of disease-causing-factors and to maintain the equilibrium of *doshas*. Evidence can be generated from study designs and the present study is an attempt to critically assess the registered studies in the field of Ayurveda from clinical trial registry of India. We found low number of trials conducted with more focus required on the quality of these studies to contribute to high quality evidence.



**PHY-PP-248**

### **Herbal Remedies for the Treatment of Tuberculosis**

**Bhagat Mokshit, Sharma Anshul, Kumar Kapil**

I.S.F College Of Pharmacy, Moga, Punjab, India-142001

mokshitkumar@gmail.com

Tuberculosis (TB), caused by *Mycobacterium tuberculosis* is an infectious deadly disease. Its treatment is one of the most severe challenges at the global level. *Tuberculosis* most commonly affects the lungs. Tuberculosis is the main cause of morbidity in modern era. Currently more than 20 chemicals medications are described for the treatment of TB. *M. Medicinal plants* have been widely used as preventives and curative solution against different common as well as lethal diseases by ancient cultures. A number of medicinal plants have been reported for anti-mycobacterial activity across the globe. When we particularly talk about TB, more than 250 medicinal plants from India have been reported. The comprehensive safety, toxicity and clinical studies are needed for these plants before using them effectively as curative medications against TB. *M. tuberculosis* is nowadays getting resistant towards conventional drug and leading to condition known as multi drug tuberculosis (MDR-TB) and extensively drug resistant tuberculosis (XDR-TB). This situation has terrified the global health community and raised a demand for new anti-tuberculosis drugs. Different tribes of India favour different medicinal plants for the treatment of TB. Gond tribes preferred leaf or root powder of Muskdana (*Abelmoschus esculentus*); korku tribes preferred leaf or root powder of Adusa (*Adhatoda vasica*) and Bhatra tribes' favoured whole plant of Van Tulsi (*Ocimum basilium*). Thus these are some of the medicinal drugs used for the treatment of TB.

**PHY-PP-249****A Review on Phytochemical and Pharmacological Profiles of Apamarga (*Achyranthes Aspera*)****Sonia Kumari, Amarpal Singh, Ajitpal Singh**

St. Soldier Institute of Pharmacy, Jalandhar, Punjab, India-144001

princerajput7272@gmail.com

The modern pharmaceuticals which we are using today for different ailments are based on medicaments obtained from plant sources. *Achyranthes aspera*, a medicinal plant belonging to *Amaranthaceae* family, possessing many Ayurvedic, Unani-Tibbi, Homeopathic, Siddha, Naturopathic properties are found all over India as an annual herb. It has been occupied a pivotal position in Indian culture and folk medicine. From the ancient time, the tribal and rural citizens of the country commonly use this herb in a variety of disorders like cough, snakebite, rabies, influenza, diarrhea and various other diseases. However almost it's every part is used in traditional systems of medicines, seeds, shoots, and roots are the most important parts which are used medicinally. In this plant many antioxidant like alkaloids, terpenoids, saponins etc. of various pharmacological properties are present. With the help of different techniques, many of the chemical constituents have been isolated from this plant that possesses activities like antiperiodic, antiasthmatic, hepatoprotective, anti-allergic, expectorant, stomach tonic, laxative, anthelmintic, diuretic, anticataract and various other important medicinal properties which are responsible for the treatment of various human disorders. For the last few decades or so, extensive research work has been done to demonstrate its biological activities and pharmacology of its extracts.

**PHY-PP-250****Nutraceuticals: An Alternative to Pharmaceuticals****Dheeraj, JatinRanjan, Virender Kumar**

College of Pharmacy, Pt. B.D. Sharma UHS, Rohtak, Haryana, India-124001

drdheeraj.sb@gmail.com

Nutraceuticals are an alternative treatment for different types of disease. In these scenario natural products (nutraceuticals) play vital role which is plant based. Plants play an important role in the daily life, which are essential not only for food, shelter and clothing but also for recreation world is colourful because of diversified flora of dye yielding plants. Nutraceuticals are products, which other than nutrition are also used as medicine. It is recognized as a linguistic combination of nutrients and pharmaceuticals, and is accepted as ‘any substance that may be considered a food or a part of food and provides medical or health benefits, including the prevention and treatment of disease’. *Echinacea* Rice bran treats cardiovascular Diseases, and eye Sight problems. Buckwheat seed proteins have beneficial role in obesity and constipation. Nutraceuticals may be used to improve health, delay the aging process, prevent chronic diseases, increase life expectancy, or support the structure or function of the body. Nowadays, nutraceuticals have received considerable interest due to potential nutritional, safety and therapeutic effects. Some of the most popular nutraceutical products marketed today are botanicals such as ginseng, ginkgo biloba. Nutraceuticals may be used to improve health, delay the aging process, prevent chronic diseases, increase life expectancy, or support the structure or function of the body. Vegetable and fruit fibers (with pectin), garlic and oily seeds (walnut, almonds, etc.), and fish oils have lipid-lowering effects in humans, through inhibition of fat absorption and suppression of hepatic cholesterol synthesis.

**PHY-PP-251****Cardiotoxicity of Anthracyclines****Dhwani Roy**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

dhwani.roy123@gmail.com

The current cancer therapies represent a major achievement courtesy of massive reductions in mortality and morbidity being achieved among cancer patients. The amplitude of cardiac side effects of cancer therapies has widened with the development of adjuvant, combination and targeted cancer therapies. Many anticancer drugs, especially the traditionally used Anthracyclines and even the newly developed ‘molecular-target drugs’, such as the anti-HER2 blocking antibody and the anti-vascular endothelial growth factor antibody, have serious cardiovascular side-effects as well. However cardiologists have not focused enough on this issue, despite the increasing clinical significance. Due to development of resistance in cancer cells to anthracyclines, a dose dependent cardiotoxicity has come into picture in last 3 decades .Therefore ,it has become a necessity to have detection schemes to counter cardiotoxicity before it becomes irreversible. Detection methods like using cardiac troponins as biomarkers, testing of risk methods associated with them and technologies like echocardiography, radionuclide angiography and cardiac MRI have come into picture. Various prevention methods have been adopted in recent years like using better substitutes, changing drug delivery system, altering administration schedules, using cardioprotectants and other concerned drugs such as ACE inhibitors. Oncologists and cardiologists have also worked together to bring in new treatment algorithms for anthracyclines induced cardiotoxicity. In this study, the major cardiovascular complications linked with various anticancer drugs class, Anthracycline’s current diagnosis, treatment algorithm and prevention strategies are presented.



***PHY-PP-252***

### **Health Benefits of Nutraceuticals for Preventing Cancer**

**Anjali, Vandana Garg**

Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

anjalibs043@gmail.com

Nutraceuticals is a term made by combining two words ‘nutrition’ and ‘pharmaceuticals’. Nutraceuticals are made to prevent various chronic diseases of human beings. They cure or inhibit the disorders which are related to oxidative stress, e.g. cardiovascular diseases, diabetes, inflammation, eye and immune disorders. Presently, nutraceuticals may be called as the bridge between “food” and “medicine”. Nutraceuticals may be herbal products, regular nutritive products, withdrawn nutrients, vitamins, dietary supplements and processed food products (like as soups, juices, cereals, beverages). In this review, we are going to discuss the two categories of nutraceuticals such as traditional and non-traditional nutraceuticals; role or benefits of nutraceuticals as well as adverse effects of nutraceuticals on human health; and comprehensive interest of nutraceuticals in modern era. Hence, we can say that nutraceuticals play a vital role for human beings in daily routine.



**PHY-PP-253**

### **Therapeutic Drug Monitoring**

**Jatin, Himanshu Kumar, Virender Kumar**

College of Pharmacy, Pt. B.D. Sharma UHS, Rohtak, Haryana, India-124001

jatinranjan24@gmail.com

Therapeutic drug monitoring (TDM) is a branch of clinical chemistry and clinical pharmacology that deals in the measurement of medication level in blood. Its main focus is on drugs with a narrow therapeutic window. TDM is the clinical practice of measuring specific drugs at designated intervals to maintain a constant concentration in a patient's bloodstream, thereby optimizing individual dosage regimens. TDM refers to the individualization of drug dosage by maintaining plasma or blood drug concentrations within a targeted therapeutic range or window. TDM not only involves measuring drug concentrations but also the clinical interpretation of the result. The purpose of this process is to individualize therapeutic regimens for patient benefit. It is combining the knowledge of pharmaceutics, pharmacokinetics and pharmacodynamics, TDM enables the assessment of the efficacy and safety of a particular medication in a variety of clinical settings. Several classes of drugs commonly monitored to ensure optimal blood levels. TDM is based on the principle that for some drugs there is a close relationship between the plasma level of the drug and its clinical effect. Besides, drug metabolism varies from patient to patient and precise therapeutic monitoring of drug levels may be of considerable therapeutic assistance. Routine monitoring is however not advocated for most drugs. Only clinically meaningful tests should be performed. Therapeutic drug monitoring aims to promote optimum drug treatment by maintaining serum drug concentration within a therapeutic range.



**PHY-PP-254**

## **Augmented Physicochemical Properties of Telmisartan by Cocrystallization with Citric Acid**

**AartiTiwari, PoonamArora**

G.H.G.Khalsa College of Pharmacy, Gurusar, Sadhar, Ludhiana, Punjab, India-141104  
aartitiwarildh@gmail.com

An important goal of solid-state pharmaceutical development is to increase drug solubility while maintaining a stable form. Cocrystals are an emerging solid-state form to change physicochemical and biopharmaceutical drug properties. A pharmaceutical cocrystal is defined as a multicomponent molecular complex comprising of a solid API and a coformer (which is safe for human consumption) that interact through noncovalent interactions in a definite stoichiometric ratio without compromising the structural integrity but improving the solubility. Besides this, pharmaceutical cocrystals are considered as new chemical entities that impart many unique and useful properties to the parent compound and are subjected to intellectual property issue. In this context, cocrystallization of an antihypertensive drug telmisartan, which has poor aqueous solubility, has been performed with citric acid to improve its pharmaceutical properties. The cocrystals were formed by evaporating the mixture of API and coformer on a rotavapour at 40<sup>0</sup>C. The main evidence for formation of cocrystal was obtained from DSC and PXRD data. The melting peak of cocrystal was in between melting points of the two components suggesting cocrystal formation. The PXRD for cocrystal contained new peaks showing a new crystalline phase. The orientation of drug molecule and cofomers in a cocrystal in a crystal lattice were determined by simulation studies. The solubility parameters of TEL increased after cocrystallization. Also, this cocrystal showed ~1.6 times increased in dissolution behavior as compared to pure drug. Higher plasma concentration of cocrystal justified its better solubility and enhanced *in vivo* absorption of drug.



**PHY-PP-255**

### **Mechanism of Zika Virus Induced Manifestations: Insights from Scientific Studies**

**Manpreet Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

preetheer.heer123@gmail.com

The Zika virus is another re-emerging RNA Flavivirus which is transmitted from *Aedes aegypti* mosquito to human. It was first identified in Uganda in 1947 in monkeys but later identified in humans in 1952 in Uganda. The cases of Zika virus have previously been reported in Africa, southern Asia and the Pacific Island. The Aedes mosquitoes are most active and bite only during the daytime. Zika virus infection may lead to miscarriage if infected to a woman during pregnancy and can cause microcephaly, a devastating innate brain condition and fetal demise. It can cause microcephaly by two mechanisms- one by causing dysregulation of Retinoic acid signalling in such way that foetus exhibits brain deformity and second by stimulating the endoplasmic reticulum stress and unfolded protein response in the cerebral cortex of infected woman's foetus. It may also lead to Guillain-Barre syndrome, a neurological disorder which is a form of temporary paralysis. When, astrocytes get infected with Zika virus which leads to breakdown of blood-brain barrier and a large influx of CD8 effector T cells. The antiviral activity of CD8 T cell within the brain distinctly limits the Zika infection of brain. As a result, it causes paralysis. It also causes severe inflammatory pathological changes by mediating the NLRP3 inflammasome activation and IL-1 $\beta$  secretion. The different scientific studies prove that it does not cross the embryonic blood-brain barrier with the use of intraplacental injection of WNV. By targeting the activation of unfolded protein responses by inhibitors is one of the therapeutic approaches to lower the Zika-associated neuropathogenesis in the developing cortex. For the proper treatment of this, the better medicament should be chosen to produce effective results.

**PHY-PP-256****Medicinal Effects and Values of Herbal Drug *Vinca rosea*****Amica**

Lovely Professional University, Phagwara, Punjab, India-144411  
amicapanja@gmail.com

In the field of medicine, many life saving drugs have been derived from plants. One of these plants is *Vinca rosea* also known as Priwinkle or *Catharanthus roseus* (Biological Name) which is grown in gardens but has an immense value in therapeutic uses. This plant has many therapeutic values like anti-diabetic, relieves muscle pain and also used in cases of depressions and many other. *Vinca rosea* contains two types of active compounds such as tannins and alkaloids. More than 100 alkaloids are found in *Vinca* plant. Every part of this plant has their own therapeutic activity. Stems and leaves of *Vinca rosea* have enormous amount of phytochemical constituents. The natural alkaloids present in the plant that is Vincristine and Vinblastine mainly present in aerial parts of the plant demonstrated clinical utility against leukemia's and lymphomas. Several semi synthetic analogues of these alkaloids are also in clinical use, most notably vindesine, used mainly to treat melanoma and lung carcinomas and associated with other drugs, to treat uterine cancers and the nor derivative vinorelbine used for non small cell lung cancer, metastatic breast cancer and ovarian cancers. Although this *Vinca* has many medicinal values but it is considered to be as "flower of death" due to its extreme poisonous properties.



**PHY-PP-257**

### **Drug-Induced Liver Injury**

**Monika Kaushik, Virender Kumar**

College of Pharmacy, Pt. Bhagwat Dayal Sharma, UHS, Rohtak, Haryana, India-124001  
monikak.kv3@gmail.com

Drug induced liver injury is an important differential diagnosis in many patients in clinical hepatology. This is the leading cause of acute liver failure in the United States. It is induced by drugs or herbal medicines and is dose dependent. Antibiotics, analgesics and NSAIDS are the most common drugs causing liver injury. The most commonly implicated antibiotics are amoxicillin, erythromycin, flucloxacillin etc. These are associated with drug induced liver injury. Paracetamol is used as an over the counter medication and its over dose is a common means of drug induced liver injury due to its wide availability and accessibility. It is the second most common cause of liver failure. Similarly, unintentional and intentional acetaminophen over dose also remains a serious public health concern. Drug induced hepatotoxicity remains a major problem that carries both clinical and regulatory significance as long as new drug continues to enter the market. Results from ongoing multi centre collaborative efforts may help contribute to our current understanding of hepato-toxicity and new therapies are urgently needed.

**PHY-PP-258****Moringa - the Miracle Tree****SarbjitKaur, Prince, Amarpal Singh, Ajitpal Singh**

St. Soldier Institute of Pharmacy, Jalandhar, Punjab, India-144001

princerajput7272@gmail.com

The growing prevalence of multi-drug resistant microbes and the recent emergence of new microbial strains that are resistant to almost all antibiotics of this era are alarming and necessitated the international scientific community to concern different strategies and seek for new effective drugs from other sources such as plants and natural products. As a result Moringa tree has attracted attention because of its huge pharmacological properties. *Moringaoleifera* belonging to *Moringaceae* family, is a fast-growing tropical edible tree. In folklore and Ayurveda, all parts of the tree were used in various healing procedures for treating different ailments. Moreover, it has high nutritional value. Being a good source of proteins, vitamins, and minerals, it is used to treat malnutrition in rural regions. *M.oleifera* contains many phytochemicals of great pharmacological properties, like alkaloids, flavonoids, and saponins, that show activities such as anti-inflammatory, anti-hypertensive, antioxidant, hepatoprotective, anti-diabetic and antimicrobial. Traditionally the powdered seeds were utilized for water purification purpose and for the eye infections (juice of leaves is being applied). Extracts of its roots and seeds have shown antimicrobial activity. Hence, the various properties of this plant extract without having side effect can be used as a framework for generating a new bioactive compound.



***PHY-PP-259***

### **Magnetic Targeted Drug Delivery System**

**Deepika Ahlawat**

PDM College of Pharmacy, Bahadurgarh, Haryana, India-124507

deepikaahlawat02@gmail.com

Targeted delivery combined with controlled drug release has a pivotal role in the future of personalized medicine. Major progress has been made in particle design and synthesis techniques. Especially in medicine, applications of magnetic nanoparticles (MNPs) are much promising. MNPs have been actively investigated as the next generation of targeted drug delivery as it is a novel approach to deliver drug using engineered 'smart' micro carriers which appears to overcome a number of limitations facing current methods of delivering medicines. The drug and a suitable ferrofluid are formulated into a pharmaceutically stable formulation which is usually injected through the artery that supplies the target organ or tumour in the presence of an external magnetic field. Depending on the fabrication method, particle size and nature they are named as magnetic microspheres, magnetic nanoparticles, magnetic liposomes etc.

**PHY-PP-260****Nanoemulsion as the Promising Targeted Drug Delivery System in Cancer Treatment****Sahil Wadhwa, Virenderkumar**

College of Pharmacy Pt.Bhagwat Dyal Sharma, UHS Rohtak, Haryana, India-124001

wadhwasahil0001@gmail.com

Nanoemulsion serves as an attractive vehicle for the delivery of drugs, nucleic acids as well as imaging agents. Recently (not recently, it has been over 15 years now) nanoemulsions have been extensively used for cancer diagnostics, imaging and therapy, especially due to their favorable properties to efficiently solubilize poorly aqueous soluble drugs, biocompatibility, high stability in vitro and in vivo, and their ability to accumulate in pathological areas with defective vasculatures.. Moreover, nanoemulsions can be engineered to carryout multiple functions by surface modification and encapsulation of pharmaceutical ingredients. Surface modification can be done by imparting the surface charge, attaching a targeting ligand, cell penetrating moieties, stimuli-sensitive groups and fluorescent dye, whereas the core can be loaded with drug, contrast agent and imaging agents. Such multifunctionality of nanoemulsion can be tailored to fit the requirement, hence smart nanoemulsions can be prepared. In this review, nanoemulsions of both lipid-based and polymeric micelle have been discussed. Focus has been made on various modifications of nanoemulsions, including those for passive targeting, active targeting, overcoming multi-drug resistance, and multifunctional effect; and other applications.

**PHY-PP-261****Novel Treatments for Methicillin Resistant *Staphylococcus aureus* (MRSA) Infection****Jashandeep Kaur, Rishabh Dev Kalia, Arshvir Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

Jashankundi@yahoo.in

The major pathogen (bacterium) that results in infections in various parts of the body is Methicillin resistant *Staphylococcus aureus* (MRSA). *Staphylococcus aureus* is a common pathogen (bacterium) which can cause a large number of infections affecting the superficial skin, leading to soft tissue infections, other infections like pneumonia, blood, bone and joint infections etc. Its infections are hard to cure as that MRSA is resistant to many antibiotics like methicillin, amoxicillin, penicillin, ofloxacin etc. MRSA can be classified in three types which are nosocomial or health care associated MRSA (HA-MRSA), community associated MRSA (CA-MRSA), livestock associated MRSA (LA-MRSA). It is the bacterium which resides inside the nasal passage and also on human skin. Basically, one in three humans carry *Staphylococcus aureus* in their nose (nasal passage) without any sickness. And out of 100 humans, one carries MRSA. It can be treated with the use of antibiotics like vancomycin, cefazolin, doxycycline, clindamycin, sulfamethoxazole and rifampicin. The prominent and advanced resistance of MRSA to beta-lactams is because of attainment of the foreign penicillin binding protein (PBP2A) encoded by *mecA* to which drugs have very little binding affinity. Recent studies have shown that apart from the use of older antibiotics various other effective treatments are also there which can treat in a better way like prostaglandin E2 receptor antagonist, prostaglandin E4 receptor antagonist, PAAG (polycationic poly-N{acetyl, arginyl} glucosamine [glycopolymers]), gepotidacin (bacterial topoisomerase inhibitor), fibrinolytic agents (plasmin, streptokinase, nattokinase), Icalprim (a bacterial dihydrofolate reductase inhibitor) and many more etc. MRSA is a fatal disease as the bacterium is acquiring resistance to various antibiotics very fast, so more new therapies should be developed to treat it in a better and targeted way.



**PHY-PP-262**

### **Painless Future ahead with Needleless Injection**

**Gupta Nikhil, Jindal Diksha**

AIPBS, Adesh University, Bathinda. Punjab, India-151009

pharma.diksha@rediffmail.com

Needleless Free Injection Technology (NFIT) is a wide range of Drug Delivery System (DDS) in which drug get through the skin. The Needle Free Injection System is intended to deliver various medication either intramuscularly or subcutaneously by means of narrow, precise fluid stream, which penetrate (grammatical error correct it) or administered through the skin and deliver the medicament to the body. The dead space also minimized with needle free injection technology to reduce the vaccine waste (what is it?). This system is not only meant to be beneficial for Pharma industry but also for developing the world by painless mass immunization program in which the immune response generated by jet injectors against both attenuated or inactivated viral and bacterial antigens are equivalent to an occasionally greater than immune response in the case of traditional needle and syringe system preventing needle injuries as well as the complications arises due to multiple use of single needle and the other draw backs of traditional needle and syringe system. It can also be used by patient authorized by their physician to self-inject or to have other individual for administer injection of prescribed medication. These devices are classified into their type of working, type of load, mechanism of drug delivery and site of delivery. The highly discussed drug products can also administered by needle free injection technology which is not in the case of traditional needle and syringe system and even the drug in the form of solid pallets can also be administered with the help of needle free injection technology. The main component like sterility, shelf life and viscosity of the drug should be taken care while administrations through needle free injection technology for stable, safe and effective doors.

**PHY-PP-263****Patentiflorin A: Anti-HIV Compound****Sanam Kumari**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

dadhwalsanam@gmail.com

The Human Immunodeficiency virus (HIV) is a lentivirus (a subgroup of retrovirus) that causes HIV infection and over time Acquired immunodeficiency Syndrome (AIDS). HIV infects vital cells in the human immune system such as helper T cells, macrophages and dendritic cells and leads to low level of CD4 T cells through a number of mechanisms including apoptosis of uninfected bystander cells, direct viral killing of infected cells. Medicines like reverse transcriptase inhibitors, protease inhibitors, are used for HIV treatment. Recently a new drug has been identified which is having better anti-HIV effect than current drugs. Patentiflorin A is a compound extracted from stem, leaves and root of the willow-Leaved *Justiciagendarussa* plant. Evaluation of the compound against both the M- and T-tropic HIV-1 isolates showed it to possess a significantly higher inhibition effect than the clinically used anti-HIV drug azidothymidine (AZT) and also having less toxic effect. It shows its activity by inhibiting the reverse transcriptase (RT) enzyme which is required for HIV to incorporate its genetic code into a cell's DNA. It acts on both earliest stages of HIV infection when the virus enters macrophage cells and alters infection when it is present in T-cells of the immune system. Patentiflorin A represents a novel anti-HIV agent that can be added to the current anti-HIV drug cocktail regiments to increase suppression of the virus and prevention of AIDS. Subsequently the presence of a quinovopyranosyloxy group in the structure is likely essential to retain high degree of anti-HIV activity. It is also effective against known drug-resistant strains of HIV virus which makes it a very promising candidate for further development into a new HIV drug.



**PHY-PP-266**

### **Biomedical Potential of Mushrooms: An Update**

**Bajender Singh, Vijay Mishra**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

bajender94@gmail.com

The mushrooms are eukaryotic, non photosynthetic and aerobic organisms that form characteristic fruiting bodies. All mushrooms are heterotrophic and assimilate nutritive substances by absorption of simple molecules as nutrients, after complex organic polymers such as celluloses are degraded by extracellular enzymes secreted by them. The mushrooms are taxonomically classified into two different groups like Basidiomycetes and Ascomycetes. Commercially produced edible and medicinal mushrooms can be cultivated on lignocellulosic agricultural residues such as straw, wood chips, and sawdust. *Ganoderma lucidum* has not less than 16,000 genes that code for more than 200,000 compounds including 400 active constituents. More than 150 novel compounds have been recognized from mushroom species up until this point. Unmistakenly, mushrooms make numerous novel constituents, deserving therapeutic examinations. Mushrooms are nature's smaller than usual pharmaceutical processing plants, rich in an immense range of novel constituents and completely open for investigation.

**PHY-PP-267****Role of Medicinal Plants in Indian Economy****Sharib Khan, Rohit Bhatia, Hemant Kumar**

I S F College of Pharmacy Moga, Punjab, India-142001

srkhjp96@gmail.com

The importance of medicinal plants to the economy of countries like India remains critical and strategic because medicines are the key to maintain a healthy population that drives and sustain the economy. The role of plant-based pharmaceuticals in global economy is critical and this makes research on medicinal plants crucial. India is one of the top countries of the world, who are rich in natural resources. Approximately, 121,000 floral and faunal species are identified in India. Out of this, plant species are about 15000-17000 and among them 6000-7500 species are identified as medicinal plants. The export of medicinal plants and herbs from India has been quite substantial in last few years. India exports medicinal herbs and drugs worth Rs. 500 crore. Indian pharmacopoeia has specified 85 species of medicinal plants, which are increasing Indian economy year by year. So, there is an urgent need to increase the productivity and cultivation of such plants at a huge scale and also to implement regulatory strategies for their growth. In the present paper, authors have described details of common medicinal plants including their annual production, consumption and their role in increasing the national economy of India.

**PHY-PP-270****Evaluation of the Effect of Vanillic Acid on Streptozotocin-Nicotinamide Induced Diabetic Neuropathy in Rats****Bipandeep Kaur, Simranjeet Kaur, Neha Sharma, Navneet Khurana**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

Bipandeepkaur07@gmail.com

Hyperglycaemia leads to many complications, but one of the most common complications is considered as diabetic neuropathy. Diabetic neuropathy causes damage to the peripheral and autonomic nervous system. It is the leading cause of morbidity and mortality worldwide, and its prevalence is increasing at an alarming rate. Currently, pregabalin and duloxetine are the only FDA approved medications used for the treatment of diabetes. A safer, disease-modifying neuroprotective drug is required to cure diabetic neuropathy. Vanillic acid was selected as the candidate drug because previously the cognitive effects of vanillic acid were evaluated against neurodegeneration in mice, but the preclinical studies on its potential against streptozotocin-nicotinamide induced diabetic neuropathy are still not investigated. Key Results: Vanillic acid showed a significant improvement in blood glucose level, body weight, grip strength, locomotors activity and thermal hyperalgesia in diabetic rats. The vanillic acid treatment proved to have a significant role in reducing oxidative stress in diabetic rats. Our results suggest that vanillic acid is a safe and modifying drug treatment for neuropathy caused by diabetes.

***PHY-PP-272*****Development of A New Apparatus for Bioadhesivity Evaluation with Sherington Rotary Drum****Nishant Thakur, Manish Goswami**

University Institute of Pharmaceutical Sciences, Chandigarh University, Gharuan, Mohali, Punjab, India-140413

nishant.thakur33@rediffmail.com

Among all the known routes of the drug administration oral route is most preferred route by the patient because of its compliance and easiness. Although the drug faces the problem of the hepatic first pass metabolism. Even, enzymatic degradation by the oral routes also poses a threat to many drugs. Therefore transdermal route is one of choice route for the drug administration. Stratum corneum and the Skin acts as the rate limiting barrier for the drugs and the patch formulation must be stable enough to adhere to the skin. Despite of several transdermal formulations available, a little work has been done on the evaluation of the bioadhesivity of the formulation to the skin. Bioadhesion may be defined as the state in which two materials, at least one of which is of biological nature, are held together for extended periods of time by interfacial forces. In transdermal drug delivery system an adhesive is a material which attaches the material to the skin, therefore the adhesive is a sort of biological adhesive.



**PHY-PP-273**

### **Marine Algae as Potential Anticancer Agent**

**Gurjit Kaur**

School of Pharmaceutical Science, Lovely Professional University, Phagwara, Punjab, India-144411

gurjitk363@gmail.com

Marine life is rich in chemical & biological diversity; therefore it is an extraordinary resource for anticancer agents. Cancer refers to as abnormal cell growth and is one of most dreadful disease which is hitting the major part of population every year. Despite of many anticancer drugs available in the market, there is need for drugs of natural origin having least side-effects with high potency. The flora from marine sources is rich in efficacious anticancer component majorly belonging to the class of polyphenols and sulfated polysaccharides. The bacteria, fungi, micro algae, mangroves and other halophytes constitute around 90% marine biomass which is of crucial importance. Out of this, algal flora comprises 65.63% of total oceanic flora and has intense curative and preventive potential for the treatment of cancer. Blue green algae could be a key to treat cancer for e.g Coibamide A has shown a potent anticancer activity in various cell cultures as well as in mice. Crassin acetate obtained from Caribbean gorgonian *pseudoplexaura porosa* has been found to be cytotoxic to human leukemic cell during in vitro studies. Sinularin along with its dihydro derivatives obtained from *sinularia flexibilis* also have significant role for treatment of cancer. Marine derivatives have extreme potency to kill abnormal growth of cells but they are not much explored. The need of hour is extensive investigation to search for potent, safer and much more cheaply anticancer drugs having minimum possible side- effects.



**PHY-PP-274**

### **Medicinal Use of Terminalia Arjuna for Cardiovascular Disease-Cardiomyopathy**

**Harjot Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411  
jotkaur3504@gmail.com

Cardiomyopathy is one of the cardiac ailments which is generally known as the disease of heart muscle. Due to this, heart finds it difficult to pump the blood to rest of our body. Epidemiological studies reveals that heart diseases are responsible for the death of around 6,30,000 people in US each year. Recently, In India it has become one of the major causes of death. In 2003, the prevalence was estimated to be 3-4% in rural area & 8-10% in urban area according to population based cross sectional surveys. Mississippi is the state with highest rate of death from heart disease at 233 deaths per 100,000 numbers of populations. Conventional methods for its treatment includes ace inhibitors, diuretics and other medications such as blood thinners, beta blockers etc. Many medical procedures, surgery, devices have been used up for its diagnosis purpose. Herbal remedies include the use of *terminalia arjuna*, ginkgo biloba (Maidenhair tree), hawthorn (*Crataegus species*), Coleus, Danshen (*Salvia miltiorrhiza*), Lingzhi(*Ganoderma Lucidum*)etc. *Terminalia arjuna* is an evergreen tree which is found in India. Arjuna bark helps in improving the muscle functions of heart and adds up to strength of coronary arteries and improves the blood pumping performance. It also reduces blood pressure and controls the pain. Herbal medicines are being used up along with conventional drug therapy and interactions produced by these combinations poses a problem to use them readily. Although, Herbal drugs are known for their promising biological action but are clinically unproven to be standardized and needs more explore in this area.

**PHY-PP-275****Aqueous Alcoholic Extract of *Tinospora cardifolia* Used in Healing of Diabetes and Pharmacokinetic Checked with Glibenclamide****Shubham Kumar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411  
shubu380@gmail.com

Diabetes is a metabolic disorder in which there is an increase in the blood glucose level. Increase in the blood glucose level may lead to increase in thirst, hunger & urination. Long-term diabetes cause complication such as cardiovascular disease, stroke, damage to eyes, chronic kidney disease. A large number of population is suffering from diabetes & it is a challenge to control diabetes. *Tinospora cardifolia* (TC) is commonly known as Guduchi, belonging to family Menispermaceae. The shrub mainly found in India and the medicine has anti-diabetic activity. Aqueous alcoholic extract of *Tinosporacardifolia* inhibits cytochrome P450 isoenzyme. The metabolism of glibenclamide is inhibited if we used to increase the concentration of extract. Formations of metabolites were inhibited with increasing concentrations of extract in the liver. The extract is co-administrated with glibenclamide, in three different groups (0, 100 & 400 mg/kg) with glibenclamide at 1 mg/kg dose to observe the pharmacokinetics of glibenclamide. Pharmacokinetic parameters were analyzed based on plasma concentrations of Glibenclamide from all the groups by LC-HRMS methods using Glipizide as an internal standard. At 400 mg/Kg dose, a marked increase in the bioavailability of Glibenclamide was observed with a significant delay of  $T_{max}$  and suppression of clearance. The study indicated that there is an increase in  $C_{max}$ , boost in the area under the curve (AUC), and delay in  $t_{max}$ , suppression in clearance (it is due to metabolism of glibenclamide). The bioavailability of the drug is increased in a clinical situation when co-administered with TCE for a long time. So the aqueous extracts of *Tinosporacardifolia* are used in the treatment of diabetes and have little effect on the pharmacokinetics of glibenclamide.



**PHY-PP-276**

### **Fast Dissolving Oral Strips: An Overview**

**Ashutosh Gupta, Jatin Kumar, Makhan Lal, Amanjot Kaur, Sakshi Panchal, Surajpal Verma, Harmanpreet Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

harmanpreetmadaan@gmail.com

Fast dissolving oral strips are the emerging novel technique for drug delivery and personalized therapies to the patients. They are being preferred over conventional tablets because of its advantages like no risk of choking, fast onset of action, enhancement of bioavailability, easy to handle etc. It constitutes water-soluble polymer (1-25%), active pharmaceutical ingredient (1-25%), plasticizer (0-20%), coloring agent, sweetener and filler (0-40%). The underlying mechanism involved in these strips when it comes in contact with saliva it gets disintegrated and release medication. Various methods involved in the fabrication of strips are solvent casting method, hot melt extrusion method, semi- solid casting method, rolling method etc. Evaluation of prepared strips is based on different parameters like thickness, drug content uniformity, tensile strength, in-vitro disintegration time, in-vitro dissolution etc. Fast dissolving oral strips guarantees patient compliance particularly in pediatrics and geriatrics patients.



**PHY-PP-278**

### **An Insight on Role of Pharmaceutical Co-Crystals for Dissolution Rate Enhancement of Poorly Water-Soluble Drugs**

**Rubiya Khursheed, Sachin Kumar Singh, Sheetu Wadhwa**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

Rubiyakhursheed141@gmail.com

It has been reported several times that among the total drugs that are synthesized with the help of combinational chemistry, about 70% drugs suffer from poor aqueous solubility. This poor aqueous solubility impediments a major challenge for the formulation scientists as well as regulatory agencies to develop a meaningful and well-validated dissolution method for these drugs. The solubility of the drug molecules affects the dissolution and absorption, which plays a key role in the therapeutic efficacy of the drug formulation. Several approaches such as nanotechnology, nanosuspensions, nanoemulsions, self nanoemulsifying drug delivery system, solid dispersion; complexation and liquid-solid technology are used for solubility enhancement. Amongst different methods for solubility enhancement, (need to add better another advantage), while benefitting from the physicochemical properties of the cofomer which is ascribed to interactions between a hydrophobic drug and hydrophilic cofomer. Co-crystals are physically and chemically stable, patentable and have good flow properties. Co-crystals are synthesized using solid based methods such as melt extrusion, solid-state grinding and liquid-based methods such as liquid assisted grinding, solvent evaporation, spray drying, etc. *The major challenges which come across for co-crystal development are the safetyof cofomers, erratic performance during dissolution and solubility in different media, difficulties in establishing In Vitro-In Vivo correlation, and polymorphism.*

**PHY-PP-280****Pharmaceutical Intervention of Rotenone through Novel Drug Delivery System to Decrease its Peripheral Toxicity in Rotenone Model of Parkinson Disease****Vishu verma, Souvik Mohanta, Neha Sharma, Monica Gulati, Gopal Lal Kathik, Navneet Khurana**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

vishuverma778@gmail.com

Parkinson's disease (PD) is the second most common neurodegenerative disorder worldwide, which is characterized by motor symptoms (tremor at rest, rigidity, hypokinesia, bradykinesia and postural instability) and non-motor symptoms (cognitive, autonomic, and psychiatric). Rotenone is one of the most important environmental toxins which can develop all the hallmarks of PD including the production of Lewy bodies. All the mechanisms involved in the pathogenesis of PD such as induction of oxidative stress, apoptosis, protein aggregation, mitochondrial dysfunction, behavior and motor deficits can be induced by rotenone. Despite being the most preferable model for PD, the rotenone model has also some drawbacks such as systemic toxicity producing high mortality rates, liver toxicity, bone marrow depletion, achlorhydria, weight loss along with many other systemic side effects. This study focused on the modification of rotenone through novel drug delivery systems (NDDSs) to reduce its toxicity. NDDSs are used to deliver the required amount of drugs effectively to the appropriate target sites and to maintain the desired drug levels in the body. Many drug delivery systems are currently being used for this purpose, which include liposomes, nanomicelles, nanoparticles, niosomes, transdermal drug delivery, implants, microencapsulation, and polymers. Among them, *nanomicelles* are having extra advantages over others in terms of its easy preparation, better drug solubility, lesser toxicity, increased circulation time, enhanced tissue penetration, require low dose and target ability. The present study aimed to improve the efficiency of rotenone by formulating its nanomicelles for developing an improved model for PD which will help in reducing its peripheral toxicity.



**PHY-PP-281**

### **Scope of Herbal Drug Delivery Systems in Modern Era**

**Ittishree, Anju Dhiman, Vandana Garg**

Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

ittishree30@gmail.com

Herbal medicines have been largely disburshed since ancient times and clinically proven by several types of research regarding their advantageous properties that have been recognized by patients for their better therapeutic values with fewer toxic and adverse effects equated to contemporary or synthetic medicines. Novel drug delivery system is a novel methodology to drug delivery that reports the precincts of the traditional drug delivery systems. Targeted drug-delivery systems at the moment are more communal for the management of furthermost life-threatening ailments such as cancer. The use of phytosomes, emulsions, microspheres, liposomes, ethosomes and solid lipid nanoparticles of herbal formulation has boosted the therapeutic effects of plant extracts. Several tremendous phytoconstituents have been fruitfully delivered using NDDS. Further, several plant extracts and phytomolecules, even though having brilliant bio-activity *in vitro* establish less or no *in vivo* actions due to their poor lipid solubility or inappropriate molecular size or both, instigating poor absorption and poor bioavailability. There is great prospective lied in the enhancement of novel drug delivery system for herbal formulation by means of its safe, effective, convenient and economically inexpensive drug delivery.

**PHY-PP-282****Evaluation of *Croton tiglium* Linn. on the Basis of Qualitative and Quantitative Parameters****Priyanka Joshi, Amrit Pal Singh, Priti Verma, Manish Vyas, Gopal L. Khatik**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

priyankajoshi00001@gmail.com

*Croton tiglium* Linn (*C. tiglium*) belonging to family Euphorbiaceae is an Ayurvedic medicine known as “Jaipala” in Sanskrit. Seeds of *C. tiglium* are classified under the upvishavarga due to its toxic nature. However, it is also known for its multidimensional therapeutic attributes including anti-dermatophyte, anti-oxidant, anti-tumour, anti-HIV, anti-molluscicidal, anti-convulsant, larvicidal activity, anti-termite activity, genotoxic activity, analgesic activity, haem-agglutinating & haemolytic activity, and antinociceptive effect due to the presence of secondary metabolites like alkaloids, flavonoids, terpenoids, saponins etc. In the present study, an effort was made to check the quality of the sample of *C. tiglium* collected from the local market of the Jalandhar and authenticated from National Institute of Pharmaceutical Education and Research, Mohali (NIPER). The sample was divided into six different batches to perform the physicochemical, qualitative, quantitative parameters and chromatographic study to evaluate the collected sample of *C. tiglium* by comparing with standards. The results of various parameters are lying in the range of available standards.



**PHY-PP-283**

### **A Review on Cosmeceuticals and Herbal Cosmetics**

**Rahul Verma, Ankush Sharma, Chandani Kumari, Charanjit Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

[gopildh@gmail.com](mailto:gopildh@gmail.com)

Cosmeceuticals are cosmetic-pharmaceutical hybrid products meant to improve the health and beauty of the skin by providing protection from acne, wrinkles and sunlight. Cosmeceuticals are the fastest growing segment of the personal care industry, and a number of topical cosmeceutical treatments for conditions such as photoaging, hyperpigmentation, wrinkles, and hair damage have come into widespread use. Korea has been on the forefront of creating the newest generation and most innovative cosmeceuticals products including ingredients such as snail secretions, starfish powder, botanical extracts, green tea, and red ginseng. Herbal cosmetic products are just not used for beautification but for different skin ailments. Herbal cosmetics are prepared by using different cosmetic additives to form the base in which one or more herbal ingredients are used to cure various skin ailments, such as aloe vera gel and coconut oil. These products improve the functioning/texture of the skin by increasing collagen growth by eradicating harmful effects of free radicals, maintain keratin structure in good condition and making the skin healthier. There are numerous herbs available having different uses in cosmetic preparations for skincare, hair care and as antioxidants. However, cosmeceuticals remain an unrecognized category by the US Food and Drug Administration, and therefore stringent regulatory pathways do not exist to guide research and marketing. Increasing knowledge of the mechanisms underlying intrinsic and extrinsic skin aging, including reactive oxygen species formation, effects of declining hormones, and ultraviolet radiation, form the scientific basis for common cosmeceuticals such as retinoid, botanicals such as soy isoflavones, and even moisturizers and sunscreen. The demand for herbal cosmetic is rapidly expanding. The current review highlights the importance of cosmeceuticals, herbal cosmetics and the herbs used in them along with their advantages over the synthetic counterparts.

**PHY-PP-284****In-Sight to Therapeutic Potential of Herbal Drugs in the Treatment of Cancer****Tarun Gill, Barinderjit Kaur, Gopal L. Khatik, Navneet Duggal, Manjinder Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

tarun11602387@gmail.com

Cancer is one of the leading cause of mortality around the world. Chemotherapy, radiation therapy and surgery are currently used choices for the treatment of different types of cancers. Although in chemotherapy, the current synthetic inhibitors like alkylating agents, antibiotics, steroid analogue used in targeted therapies have improved patient prognosis, however toxicity and development of resistance to these agents still remain a major challenge. Drugs obtained from the herbs such as vincristine, vinblastine, etoposide and taxols showed lesser toxicity and better efficacy in number of oncological conditions such as in breast cancer, testicular cancer, leukemia and brain tumor. Recently various plants were reported for their potential anticancer activity some of them are, oridonin, a diterpenoid natural product effectively inhibit the proliferation of multiple cancer cell types, including human breast cancer, gastric cancer, leukemia, gallbladder cancer, cervical carcinoma, and hepatocellular carcinoma. *Annona muricata*, also known as soursop, graviola or guanabana contains acetogenins, a class of bioactive polyketide-derived constituents that were found to possess therapeutic potential against cancer. *Ledum groelandicum retzius* also known as Labrador tea, its methanolic leaf extract found to possess anticancer activity. *Tinospora cordifolia* commonly known as Guduchi also recently reported for anti-neoplastic activity against Ehrlich ascities carcinoma. With the enhancement in the technology and rationale based approaches, the herbal drug approach can be potential means of treating the cancer and will also be economical and cost effective.



**PHY-PP-285**

### **Chromatographic Fingerprinting and Phytochemical Investigation of *Ficusin fectoria* Bark**

**Ahmad Makeen, Amandeep Singh, Ayushi Mahajan**

Department of Pharmacognosy and Phytochemistry, Khalsa College of Pharmacy, Amritsar, Punjab, India-143001  
amandeepkcp@gmail.com

*Ficusin fectoria* (Syn; *Ficusvirens*) is commonly known as White Fig or Pilkhan, belongs to the family Moraceae and is found in India, Malaysia and northern Australia. Several phytochemical components are reported in the literature from the plant bark which are responsible for the excellent antioxidant, anti-inflammatory, antiulcer, cardiovascular and neurodegenerative capacity of the crude plant extracts. Owing to rich pharmacological profile and vast chemical diversity of *F. infectoria*, it is proposed to standardize the plant drug according to globally accepted standard protocol. Chromatographic fingerprinting is considered to be one of the most important and acceptable technique for quality evaluation of medicinal plant drugs. In the present study, HPTLC fingerprinting of crude methanolic and chloroform extract was carried out using CAMAG linomat 5 instrument. Crude methanolic and chloroform extract was lyophilized and re-dissolved in methanol and chloroform to yield a drug sample of 15µl each. Each spot of 2µl was applied on pre-coated silica 60 F 254 plates. Plates were then allowed to run using solvent system comprising of ethyl acetate: formic acid: acetic acid: water (7:3:1.1:1.1) and scanned at 254nm. The HPTLC chromatogram of both the crude methanolic and chloroform extracts showed the presence of various compounds at different R<sub>f</sub>. The major component found in both the methanol and chloroform extracts were found at R<sub>f</sub> 0.33 and 0.60 having peak areas of 34.71% and 35.61% respectively. The peaks at R<sub>f</sub> 0.14 and 0.25 can be considered as unique identity or chemical marker to highlight the quality of chloroform extract whereas peaks at R<sub>f</sub> 0.83 and 0.91 can be considered to highlight the quality of methanol extract and chemical standardization of *F. infectoria* crude drug.



**PHY-PP-286**

**Impact of Blood Pressure and Pulse on 7 Days Outcome in Patients with Stemi**

**Akhilesh Gokhale, Pranjal Sharma, Prabhakar K. Deshpande**

NKP Salve Institute of Medical Science and Research Centre, Nagpur, Maharashtra, India-440019

apg5126@gmail.com

STEMI (ST-segment elevation myocardial infarction) research poses difficulties regarding informed consent due to time constraints, symptom severity, and potential cognitive impairment. The relation between blood pressure and pulse rates has been studied scarcely. This study aims to deduce a significant relation between these two parameters. The purpose of this study was to compare and predict 7days outcome in patients with STEMI in accordance with blood pressure and pulse rate. The multicenter Observational study analyzed 32 patients. The study included recording of admission blood pressure and pulse rate in patients with STEMI. Variations were seen in accordance to various parameters and compared to deduce the conclusion. Blood pressure (systole and diastole), average arterial pressure and pulse rate were studied on the first day and on the 7<sup>th</sup>day. No statistically significant difference was observed between surviving and non-surviving patients of STEMI. Variation in pattern of blood pressure and pulse rate were insignificant in predicting the approximate 7 days outcome in patients with ST- segment elevation myocardial infarction (STEMI).



**PHY-PP-287**

### **Application of Spray Drying Technology for the Solidification of Apple Extract**

**Souvik Mohanta, Vishu Verma, Jivan Jyotipaul, Sananda Som, Bimlesh Singh Rathore, Monica Gulati, Sachin Kumar Singh**

School of Pharmaceutical sciences, Lovely professional University, Phagwara, Punjab, India-144411

souvikmohanta@gmail.com

Apple is always considered as the healthiest fruit of all. It has the second highest level of anti-oxidative power among all other fruits and its consumption is directly related with controlling the risks of colon specific diseases. Study confirmed that cloudy apple juice can decrease hyper proliferation, DNA damage and crypt-foci development in the colon of dimethyl hydrazine initiated rats. Though researchers have proven the efficacy of liquid apple extract for the treatment of colorectal diseases but till date the study is limited to its liquid extract only. Hence, despite having aforementioned benefits, apple extract has not been placed in the market due to different issues related to its stability in its liquid form. The problems that are faced by liquid extract are mainly of stability (microbial growth, oxidation, sedimentation, and precipitation), chances of inaccurate dose delivery, and failure in obtaining a required taste. These limitations can be easily overcome by converting the liquid extract them into solid form. Both from laboratory as well as industrial perspective, spray drying technique has earned a huge respect because it is fast, single step, reproducible, continuous and most importantly easily scalable and cost effective. The powders obtained by spray drying process also have a good flow properties and high product yield. Various carriers like Aerosil, Lactose, MCC pH 102 and Syloid XDP were used alone and in combination with trehalose to produce free flowing powder of the liquid extract and then their liquid adsorption capacity was also calculated. The obtained powders were screened for angle of repose to get the powder with the best flow. The results suggested that Aerosil and Trehalose combination yielded the best free flowing powder and hence were selected as the solid carriers for the solidification of liquid apple extract. This presentation aims in proving the worth of using Aerosil and Trehalose for solidification of liquid apple extract.



**PHY-PP-288**

**Neurotransmitters and Chemical Mediators of Inflammation: The Therapeutic Targets in Neuropathic Pain**

**Axel Manzi, Sakshi Panchal, Indu Melkani, Bimlesh Kumar, Sachin Kumar Singh, Monica Gulati, Narendra Kumar Pandey, Saurabh Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

manziaxel@yahoo.fr

Primary lesion, dysfunction and/or transitory perturbation in the peripheral or central nervous system (CNS) lead to neuropathic pain. Somatosensory pathway responsible for the conscious perception of touch, pain, pressure, heat, movement and vibration originate from muscles, joints, skin and ears. Accumulating evidences shows that inflammatory mediators (TNF- $\alpha$ , Bradykinin, PGE<sub>2</sub>, IFN- $\gamma$ , Histamine, Fractaline and BDNF) and neurotransmitters (Glutamate, Substance P, CGRP, ATP and Serotonin) contribute to develop neuropathic pain. Nerve injury produces an inflammatory component, both at the site of injury and at the level of cell body in dorsal root ganglion. Local enrichment of (pro-)inflammatory mediators provide stimulation for nerve fiber sensitization and modulation of transient receptor potential channels (TRPV1), these have been shown to be directly activated by reactive oxygen/nitrogen species, leading to increased nerve fiber excitation and manifestation of mechanical and cold hypersensitivity behaviors. On the other hand, in the development of neuropathic pain, peripheral neurons transmit signals to spinal dorsal horn neurons to release calcitonin gene-related protein, substance P, glutamate, and ATP like neurotransmitters. Locally in the dorsal horn, there are also neurotransmitters such as GABA, glycine, serotonin are involved; they may initiate microglial activation in association with neuropathic pain. This presentation reviews the role of inflammatory mediators and neurotransmitters as one of the key targets for treatment in neuropathic pain.



**PHY-PP-289**

### **Efficacy of Brivaracetam in Adult Epileptic Patients**

**Ankush Sharma, Rahul Verma, Naman Mahajan, Charanjit Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

sharmaankushsharma9090@gmail.com

Brivaracetam is a selective, high-affinity ligand for synaptic vesicle protein 2A, recently approved as adjunctive therapy in the treatment of focal seizures in patients 16 years of age and older with epilepsy. The goal of the present analysis was to determine if the dose-response of brivaracetam as monotherapy would fall within the range associated with brivaracetam efficacy as adjunctive therapy. An existing brivaracetam population pharmacokinetic model consisting of first-order absorption, single compartment distribution, and first-order elimination components was extended by estimating the clearance changes due to co-administration of 12 widely prescribed Antiepileptic drugs. Data for the population Pharmacokinetic analysis originated from Phase III add-on trials and two terminated Phase III monotherapy trials. An existing population model of daily seizure rate versus brivaracetam daily average concentration was applied to the data from the three add-on trials. Simulations allowed the assessment of the combined impact of covariate effects on both the pharmacokinetics and the pharmacodynamics of brivaracetam, and indicated that in the absence of other AEDs; only marginal changes in the overall dose-response relationship would be expected.



**PHY-PP-290**

### **Development of Cosmeceutical Product from Nano-Sized Phytocompounds**

**Divyani Verma, Iqbaljit Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

divyaniverma1997@gmail.com

Plant-derived bioactive compounds have been used in cosmeceuticals from the last 10 years and have shown potential for beauty applications, including sunscreen, moisturizing, anti-aging and skin-based therapy. The major concerns in the usage of phyto-based cosmeceuticals are lower penetration and high compound instability of various cosmetic products for sustained and enhanced compound delivery to the beauty-based skin therapy. To conquer these problems, nano-sized delivery technologies are used for sustained and enhanced delivery of plant-derived bioactive compounds in cosmeceuticals sectors and skin protecting activities. Novel drug delivery systems have gained popularity since last two decades because of its advantages over conventional dosage forms. Nowadays, researchers are mainly focusing on herbal formulations due to the toxicity of the synthetic molecule. Various synthetic agents have been used as photoprotectives but they have limited use because of their potential toxicity in humans. *Aloe vera*, curcumin, resveratrol, quercetin, vitamins C and E, genistein, and green tea catechins were successfully nano-sized using various delivery technologies and incorporated in various gels, lotions, and creams for skin, lip, and hair care for their sustained effects. The application of novel approaches can also improve its effect regarding the continuous action of herbs on the human body.

**PHY-PP-291****Diabetic Ketoacidosis****Irina Ghosh, Chandani Kumari**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

irinaghosh17@gmail.com

Diabetes mellitus, a chronic medical condition, affects almost 25.8 million people (8.3%) in the United States, of these, 7 million cases are undiagnosed. Diabetes mellitus continues to increase in prevalence, with the most recent data indicating that 1.9 million people were newly diagnosed in 2010 (Centers for Disease Control and Prevention, 2010). Diabetic ketoacidosis (DKA) is one of the most serious and life-threatening complications of Diabetes mellitus. Diabetic ketoacidosis (DKA), results from insulin deficiency, is a medical emergency that is frequently encountered in the emergency department. The first and most essential treatment of DKA is fluid resuscitation. Fluid resuscitation serves several functions, including clearance of ketones and other byproducts of DKA, restoring blood flow to vital organs, and correcting electrolyte imbalances. Another important component to manage this condition is increased production of counterregulatory hormones such as glucagon, catecholamines, cortisol, and growth hormone. This, in conjunction with insulin deficiency, results in ketosis and accelerated glycogenolysis and gluconeogenesis, leading to hyperglycemia. Careful monitoring of glucose concentrations, vital signs, and electrolytes is essential to prevent complications arising from the treatment of DKA. The 2009 American Diabetes Association (ADA) consensus statement recommends monitoring blood glucose concentrations every 1–2 hours in DKA. This abstract provides an overview of the pathophysiology, presentation, diagnosis, treatment, monitoring, and complications of DKA.

**PHY-PP-292****Effect of Ginger and its Components in the Treatment of Gastrointestinal Cancer****Ayush Kumar, Shivam Duggal, Iqbaljit Kaur**

Lovely Professional University, Phagwara, Phagwara, Punjab, India-144411

iqbal.21959@lpu.co.in

Gastrointestinal malignancy is one amongst the most widely recognized tumours around the globe which includes malignancy of various organs of the alimentary canal. The frequencies of mortality rate of these tumours are terribly high. In spite of the fact that a huge range of chemo preventive therapies have been introduced since the last few years to suppress GI disease, the majority of them are very costly and have negative impact on the human health. Therefore the compounds obtained from natural sources are preferred as they are comparatively cheaper, safer and effective in treating GI tumour. Ginger (*Zingiberofficinale*) being one such natural source is widely chosen for various characteristics including unique flavour and therapeutic properties to cure nausea, loose stools, acid reflux, lack of craving, infections, cough, and inflammation of the airways in the lungs. Exploratory investigations explain that ginger possessing active pharmaceutical ingredient *i.e.*, 6-gingerol and 6-shogaol have anticancer properties. Moreover, ginger aids to improve digestion. The present study is carried out to explore the health benefits possessed by ginger *viz.*, helps in reducing the inflammation, promotes the death of cancer cells and helps in the maturation of normal cells.

**PHY-PP-295****Glycogen Storage Disorder Type-1 Von Gierke's Disease****Manish Chaudhary, Chandani Kumari**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

manishchaudhary59636@gmail.com

Glycogen storage disease type I, also known as Von Gierke's disease, is an autosomal recessive metabolic disorder. It is of two major subtypes (i) GSD-Ia, caused by a deficiency in glucose-6-phosphatase (ii) GSD-Ib, caused by a deficiency in the glucose-6-phosphate transporter. The frequency of GSD is approximately 1 in 100,000. G6Pase is the main enzyme required for conversion of glucose-6-phosphate into glucose by gluconeogenesis and glycogenolysis. The active site for G-6-P is present in the ER lumen, so it should be transported from the cytoplasm to the ER lumen by the G-6-P transporter. G6Pase and G6P transporter maintain glucose homeostasis. To date, 95 separate G6PC gene mutations including 63 missense, 10 nonsense, 17 insertion/deletion, 4 splicing, and 1 no-stop mutation are identified, and out of these 51 missense and 2 nonsense and 2 codon deletions have been confirmed as pathogenic ones. GSD-Ia is more prevalent in the Ashkenazi Jewish population, where the carrier frequency for the mutation is 1.4%. Symptoms include short-term fasting with long-term effects like growth retardation, osteoporosis, gout, pulmonary hypertension, HCC, and renal disease. Metabolic abnormalities in GSD-Ia are currently being treated by dietary therapies that have enabled patients to maintain glycaemia and reduce early signs of the disease. However, these therapies leave the patient vulnerable to long-term complications of renal disease and HCA/HCC. The effective use of gene therapies to correct the disease in animal models is very promising, with efforts to initiate clinical trials. While early interventions of gene therapy prevent HCA development, it is unclear whether gene therapy can abrogate pre-existing hepatic tumors. Describing the molecular mechanisms underlying HCA/HCC in GSD-Ia remains unknown. The mice (G6PC) that survive to adulthood and develop HCA/HCC offer a suitable model to study the etiology of hepatic tumors and their treatment in GSD-Ia. It is important to identify potential targets to guide the development of therapies, not only to correct metabolic abnormalities, but to remove the long-term complications of this disorder.

**PHY-PP-297****Artemisinin: An Antimalarial Drug to Treat Cancer****Harpreet Kaur, Subhjit Gain, Gopal L. Khatik, Manish Vyas**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

p141293@gmail.com

Cancer is the leading cause of morbidity and mortality worldwide today. It is the disease which causes uncontrollable division of abnormal cells and destroys body tissues. However, herbal drugs have been in use from a long time for treating various deadly diseases. Artemisinin is one of the active compounds which can be proved beneficial for curing such ailments. It is the sesquiterpene lactone obtained from the plant *Artemisia annua L.*, *Asteraceae*. The compound is being used as an anti-malarial drug. Instead of malaria, it also has a potential to treat cancer. Artemisinin produces free radicals after reacting with iron which results in cell death. Since, Cancer cells uptake large amount of iron as compare to the normal cells. So, these cells are more liable to the toxic effect of artemisinin. Hence, present review describes the study of Artemisinin on cancer cells showing a positive result for the treatment of cancer.



**PHY-PP-298**

### **Hypertension: the Silent Killer**

**Arshbir Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

arshgill20002@gmail.com

Hypertension remains one of the most significant causes of mortality worldwide. Primary Hypertension can be defined as an elevated BP of unknown cause due to cardiovascular risk factors resulting from changes in environmental and lifestyle factors. Another type, Secondary Hypertension, is caused by various toxicities, iatrogenic disease and congenital diseases. Complications of Hypertension are the clinical outcomes of persistently high Bp that result in cardiovascular disease, atherosclerosis, kidney disease, diabetes mellitus, metabolic syndrome, erectile dysfunction, and eye disease. Treatment strategies for hypertension consist of lifestyle modification (which include a diet rich in proteins, vegetable, fruits and low-fat food or fish with a reduced content of saturated and total fat, salt restriction, appropriate body weight, regular exercise, and smoking cessation) and drug therapies, although these vary somewhat according to different published hypertension treatment guidelines. More than 20% of Americans are hypertensive, and one-third of these Americans are not even aware they are hypertensive. Therefore, this disease is sometimes called the “Silent Killer.” This disease is usually asymptomatic until the damaging effects of hypertension are observed. Hypertension is a major risk factor for coronary artery, myocardial infarction, and stroke. This study will highlight the important risk factors, precautions, and possible treatment of the hypertension.

***PHY-PP-299*****Role of Herbal Remedies in the Management of Diabetes Mellitus: A Review****Jaspreet Kaur, Iqbaljit Kaur**

Lovely Professional University, Phagwara, Punjab, India-144411

iqbal.21959@lpu.co.in

Over the past few years, herbal medicines are getting more acceptance both in developed as well as developing nations due to their authenticity and less negative effects on the health. Medicinal plants, minerals and organic matter are the origin of many traditional herbal drugs. Diabetes is a cluster of metabolic disorders. It is a result of hyperglycaemia for the long term and it causes damage, dysfunction as well as failure of numerous organs. Various traditional herbal medicines contribute in maintaining normal sugar level among diabetic patients. The worldwide frequency of diabetes has almost doubled since 1980 in the adult population. With ineffective prevention and treatments, the global prevalence would be rise in diabetes and have some serious outcomes on the welfare and longevity of the global residents. Also, it would have crucial impact on the world economy. Medicinal herbs act as a prospective source of therapeutic aids has accomplished a substantial role in the well-being of both humans and creatures over the world. The practice of various herbs in the treatment of human disease is mentioned in the Ayurveda and other Indian literature. India is land of various plant species i.e. around 45000 and out of 45000 plant species, thousands of plant species have been asserted to have medicinal properties. The current article objective is to review of numerous Indian plant species and their components, which are used in the traditional system of medicines and exert hypoglycaemic activity.

**PHY-PP-300****An Overview of Role of Curcumin and Duloxetine Hydrochloride in the Treatment of Neuropathic Pain****Jivan Jyoti, Souvik Mohanta, Sananda Som, Sachin Kumar Singh, Bimlesh Kumar, Monica Gulati, Narendra Kumar Pandey**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

jivanjyotipaul@gmail.com

Neuropathic pain (NP) is a common neurological disorder of somato-sensory system including peripheral fibers and central neurons in which nerves are damaged or destroyed. This leads to over-sensitization of nerves, causing severe pain from stimuli that are normally painless. NP can be classified into peripheral neuropathic pain (PNP), central neuropathic pain (CNP) and general neuropathic pain (GNP). PNP includes diabetic peripheral neuropathy, HIV-associated NP, post-herpetic neuralgia; chemotherapy associated peripheral neuropathy, post-traumatic or postoperative peripheral neuropathy. CNP includes pain of spinal cord injury, post stroke neuropathic pain or the pain of multiple sclerosis and GNP includes both PNP and CNP. About 7-10% of the general population worldwide is affected from NP. It is more frequent in women (8%) as compared to men (5.7%). The most common symptoms of neuropathic pain includes “sensations (burning, tingling, ants, crawling etc.), spontaneous pain, numbness or loss of sensation, hyperalgesia (exaggerated pain in response to painful stimuli), allodynia (pain in response to non-painful stimuli like touch ”. Different drugs like curcumin and duloxetine hydrochloride are used to treat neuropathic pain. There are various reports in which curcumin is delivered through various delivery systems which include conventional formulations like powders, tablets etc., nanoformulations like self-nanoemulsifying drug delivery system (SNEDDS), nanosuspension, vesicular delivery systems etc., solid dispersions, co-crystals, complexation and liquid formulation. Similarly duloxetine hydrochloride has also been delivered as powders, enteric-coated formulations and nanoformulations as SNEDDS. The present study shows report on various formulations of curcumin and duloxetine hydrochloride that have been used for treatment of NP.

**PHY-PP-301****Antidiabetic Effect of Hydro-Alcoholic Extract of *Ficus microcarpa* Leaves in Alloxan Induced Diabetic Rats****Juhi Kataria<sup>1</sup>, Amandeep Singh<sup>2</sup>, Gurpreet Kaur<sup>1</sup>, Ankush Mahajan<sup>2</sup>**<sup>1</sup>Department of Medical Lab Sciences, Khalsa College of Pharmacy and Technology, Amritsar, Punjab, India-143001<sup>2</sup>Department of Pharmacognosy and Phytochemistry, Khalsa College of Pharmacy, Amritsar, Punjab, India-143001

amandeepkcp@gmail.com

Diabetes mellitus is a chronic metabolic disorder of multiple etiologies, characterized by hyperglycemia, and has become an epidemic disease worldwide by affecting 246 million globally. Oxidative stress is one of the causes in the development of diabetes and its complications which results from reduced endogenous antioxidant defense mechanism. Oxidative stress induced by alloxan has been known to damage pancreatic  $\beta$ -cell and produce hyperglycemia in rats and using this model, antidiabetic effect of *Ficus microcarpa* leaf extract was determined. The present study examined the effect of hydroalcoholic extract of *F. microcarpa* against diabetic rats. The prepared extract was found to reduce fasting blood glucose in alloxan diabetic rats. Diabetic rats treated with 100 mg/kg and 200 mg/kg showed a significant reduction in fasting blood glucose level, expressed as 42.61% and 44.09% change respectively. The maximum reduction (68.92%) was observed with the treatment of extract at 400 mg/kg dose, after 14th days of treatment schedule. Oxidative stress produced by alloxan was found to be significantly lowered by the administration of *F. microcarpa* hydro alcoholic extract. This was evident from a significant decrease in lipid peroxidation, glutathione peroxidase levels increased in serum as well as glycogen level was found to be increased in liver. It was concluded that the hydroalcoholic extract of *F. microcarpa* leaves had exhibited potential antidiabetic and antioxidant activity in alloxan-induced diabetic rats by reducing oxidative damage caused by free radicals in dose dependent manner.

***PHY-PP-302*****Recent Trends in Herbal Medicines****Mohanbir Singh, Dawinder, Iqbaljit Kaur**

Lovely Professional University, Phagwara, Punjab, India-144411

iqbal.21959@lpu.co.in

Herbal medicines have notable scope in the healthcare system due to various benefits it possesses i.e., natural, easy to access, less toxic effect, more efficacy etc. In recent years, people prefer herbal drugs as an alternative to conventional drugs in both developed and developing nations. It is one of the oldest and most prominent forms of effective and safe treatment strategies used for thousands of years. Herbal drugs are those agents which are prepared by using the herbs or plants with minimal side effect and without any addition of chemicals. Herbal medicines are used in the form of capsules, tablets, teas, extracts, powders and dried or fresh plants. Herbs can be used individually or in combinations. The major concern is about the use of herbal medicines to get the evidence regarding safety, efficacy, quality, availability, etc. In order to meet community expectations, herbal medicines need to be explored more either for their medicinal use in the healthcare or for the sake of commercial profits. Herbal preparations should be formulated under the supervision of regulatory authorities to reduce the health risk. They should follow the rules and regulations of Good manufacturing practice (GMP) to get more benefits.



**PHY-PP-303**

### **Obesity and Hypertension: A Co-Relation and Cure by Medicinal Plants**

**Pavas Sharam**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

sharmapavas2@gmail.com

Obesity is one of the global health concern and second leading cause of preventable death. It influences cardiovascular structure and function badly and has a negative effect on all cardiovascular risk factors. Overweight and obese patients as compared to the normal weight patients are more susceptible to the prevalence of cardiovascular diseases. Similarly, hypertension is an important contributor to global disease burden. Both obesity and hypertension lead to cardiovascular, renal diseases and they are related with an increased rate of morbidity and mortality. Visceral obesity is related to dyslipidemia and insulin resistance. It is a more important determinant of hypertension as compared to subcutaneous obesity. Potential mechanisms of obesity-related hypertension involve the increased activity of the sympathetic nervous system, activation of the renin-angiotensin-aldosterone system, sodium retention, insulin resistance and impaired vascular endothelial dysfunction. Vascular fibrosis and lipid deposition can also enhance systemic vascular resistance in obese individual. Obesity is not only a marker of cardiovascular risk but it is regarded as an important and primary contributor to the pathophysiology of hypertension. Western medical treatments for obesity have many drawbacks so the need for herbal means is very necessary. Some herbal means to cure obesity are Green Tea (Lvcha), one of the most popular teas in China, contains tea polyphenols, catechins, caffeine and Amino acids; It is frequently used to ensure weight loss. Moreover studies have shown that *Radix Lithosperm i*(Zicao) that is derived from the roots of *Arnebiaeuchroma* can reduce weight, inhibit lipid accumulation induce lipolysis, and regulate lipid metabolism.



**PHY-PP-305**

### **Scope of Drug Discovery and Development through Ayurveda**

**Amrit Pal Singh, Priyanka Joshi<sup>1</sup>, Priti Verma<sup>1</sup>, Gopal L. Khatik<sup>1</sup>, Manish Vyas<sup>1</sup>, Pramod Yadav<sup>2</sup>, P.K. Prajapati<sup>2</sup>**

<sup>1</sup>School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India –144411

<sup>2</sup>All India Institute of Ayurveda, Sarita Vihar, New Delhi, India  
amritnandra1@gmail.com

Safety and efficacy are main concerns related to the drug discovery and development. Post-approval or post-marketing withdrawal of synthetic drug molecules is common due to the stringent regulatory requirements. Therefore, the interest of scientists is shifted towards the traditional medicines and their therapies. Ayurveda, the oldest system of medicine existing due to its safety, efficacy, affordability, synergistic action and multi dimensional therapeutic abilities. In addition to this, many herbal active compounds are approved by the USFDA for the treatment of malaria to cancer and many drugs have also incorporated into the various international pharmacopoeias. The Nobel Prize in Physiology or Medicine 2015 and 2017 were given to the discoveries of molecular mechanisms controlling the circadian rhythm and novel therapy against Malaria respectively. Both these noble prizes can reveal the effect of traditional medicines and therapies in current research and trends of the healthcare system. Similarly, rationally designed, standardized, synergistic traditional herbal formulations and natural products with scientific evidences are the better alternatives of the synthetic drugs and compounds. Hence, successful integration of Ayurvedic medicines and therapies in conventional medicine are able to provide the safe, effective and quality medicines.



**PHY-PP-306**

### **Opto-Genetics: A New Approach to Treat Tumorous Cells**

**Prabal Sharma, Pranjal Sharma, Prince, Asha, Meenu Mehta, Saurabh Satija**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

sharmaprabal09@gmail.com

Advancing at the rate of about 70% new cases over the past two decades, Cancer, has become one of the leading causes of morbidity and mortality worldwide, with approximately 8.8 million deaths in 2015. A new technique used to overcome the shortcomings included in chemotherapy for cancer targets specific tumor cells rather than generalizing their action over every other cell in the body. Opto-genetics is a discipline which is a combination of both optics and genetics which are employed to control cells (especially neurons) with the use of light that have been modified to generate light sensitive ion channels. The technique involves injecting the chemical compound, nitro benzaldehyde into the tumor cells and waiting for it to diffuse through it completely. Then a beam of ultraviolet light is aimed at the chemical-filled tumor cells, which lowers the PH such that it turns highly acidic and eats itself up. According to the research conducted at UT San Antonio, within two hours, 95 percent of the cancer cells targeted in the test mice were killed. Still very experimental, this method limits the treatment to a specific area, unlike chemotherapy that affects all cells in the body. Since it only requires an injection it's also non-invasive, making it appealing for complicated areas like the brain stem or spine they're promising options for future patients who wouldn't be treatable today. This review will highlight the detailed role of opto-genetics role on cancer with future perspectives.



**PHY-PP-307**

### **Role of Herbal Drugs in Peptic Ulcer: A Review**

**Raju Kumar, Meenu Mehta**

School of Pharmaceutical Science, Lovely Professional University, Phagwara, Punjab, India - 144411

kr-raaju541@gmail.com

Peptic ulcer is a common gastrointestinal disorder. Which is due to imbalance between offensive and defensive gastric factors. This is a major cause of mortality in developing countries. The two most important factors which are responsible for ulcer formation of stomach infection by bacterium is called H. pylori (*Helicobacter pylori*) or Chronic usage of NSAID (non-steroidal anti-inflammatory medications). It is approximated up to 10% of adults are affected by peptic ulcer, globally. And rest 90%, 70% of which suffer from gastric ulcer are believed to be infected with H pylori. Different type of synthetic drugs is available to treat ulcer but these are costly. and these are producing more side effect. Peptic ulcer is can be treated by many herbal drugs with few adverse effects. This review will highlight the role of the herbal drugs in treatment of peptic ulcer and future perspective for the development of the treatment.

***PHY-PP-308*****ATP Synthase Inhibitor as Potential Biological Target****Mosharof Hussain, Rakesh Narang, Surendra Kumar Nayak**School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

mosharofhussain786@gmail.com

Recent studies of ATP synthase enzyme, as a potential molecular target for the treatment of tuberculosis have showed promising outcomes, and this enzyme is now emerging as an attractive molecular target for the development of new anti-TB molecules. Bedaquiline, a diarylquinoline derivative, is the only FDA approved antitubercular drug in last more than forty years, act specifically and selectively by inhibiting the mycobacterium ATP synthase enzyme, result in blocking its energy system of mycobacteria. In view of above fact in present report significance and mechanism of action of ATP synthase inhibitor in treatment of different types of tuberculosis have been discussed. Further, structure activity relationship (SAR) study of reported most active ATP synthase inhibitor has been presented. Present review will be helpful for the researchers, who are working in area of synthesis of ATP synthase inhibitors as anti TB agent.

**PHY-PP-309****Nanotechnology: Future of Herbal Medicines****Rajeshwar Verma, Shubham Bhardwaj, Vimal Arora**

IEC School of Pharmacy, IEC University, Baddi, Himachal Pradesh, India - 174103

rajaerv8@gmail.com

Nanotechnology is bringing a new perspective in the field of scientific and technology and its applications in healthcare that lead to the development of novel drug delivery systems. It is a promising technology in the drug discovery, as it has the tendency to bring better absorption and self-targeting i.e. without attachment of any specific ligand. Drug delivery system for herbal preparations based on applicative nanotechnology have a potential future for enhancing the product efficacy and overcoming the problem of slow or limited absorption; associated with the herbal medicine. In various studies, researchers observed that the nano-sized herbal components containing the active principle of sea wort, cassia twig, and liquorice root were found to be very effective in pulmonary, liver, bone and skin cancer. Although the application of nanotechnology is well explained in Indian traditional literature via formulation of bhasmas, but in the present era when herbal preparations are well accepted in different zones of healthcare worldwide, it requires utilization of better techniques to formulate and study Nano-Herbal formulations. The common nano-formulated herbal medicines available are Aegis, Nanosil, Shahnaz Husain's Nano Sun Block, Lifepak Nano, Nano D3, Keratin containing plant extracts of *Panax ginseng*, *Curcuma longa*, *Silybum marianum*, *Withania somnifera*, *Gymnema sylvestre*, *Salvia miltiorrhiza*, proteins and many more. Hence, herbal nanoparticle has become the leading edge of new nanotech era for better health care.

**PHY-PP-310****Significance of Regulatory Guidelines for Marketing Authorization of Advanced Dressings: Indian Perspective****Vibhu Yadav<sup>1</sup>, Parikshit Bansal<sup>2</sup>, Amit Mittal<sup>1</sup>, Sachin Kumar Singh<sup>1</sup>**<sup>1</sup>School of Pharmaceutical Sciences, Lovely Professional University, Jalandhar, Punjab, India- 144411<sup>2</sup>Ex- faculty (IPR), NIPER, Mohali, Haryana, India - 160062

yadavvibhu11@gmail.com

The present study highlights the significance of regulatory guidelines for marketing authorization of advanced dressings for wound and burn care in India. It is quite evident that burn is a serious hazard and prone to infections which finally lead to death of patient. Because of high number of incidents, scarcity of specialized burn care centers, and poor sanitation facilities aggravates the situation. One of the major reasons behind this is the quality and cost of surgical dressings that are being marketed in India. Their prices are not fixed by the Indian regulatory bodies as well as there are no specific criteria for the quality of such dressings. This provides flexibility to the retailers to sale the surgical dressings that are Indian made at the same rate as that of imported one. Hence, the treatment becomes very costly as the dressings need to be changed after a gap of one day. This leads to non-affordability of such dressings among poor masses. Ultimately, this may lead to serious infection or death of the patient. Despite of such grim situation, the need for cost-effective surgical dressings without compromising its quality is totally ignored by the Indian regulatory bodies. The present study focuses on past, current and future scenarios related to burn and its dressing as well as need for newer innovations. Various gaps addressed in this article provide ideas for continued discussion and appropriate action to support the growth of the wound care dressings industry and facilitate the move for a healthier world.

**PHY-PP-312****Impact of Sumo-1 on Alzheimer's Disease Pathology and Related Diseases: Evidences from Animal Studies****Wazahat Anwar, Arshvir Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

wazahatanwar68@gmail.com

Alzheimer is a highly prevalent, insidious neurodegenerative disorder, which is characterized with cognitive decline in progressive manner and is commonly seen as cause of dementia in aged person. Starting from hippocampus, which is involved in making new memories, it leads to anterograde amnesia, secondly it affects speech area and then mood imbalance and finally affect frontal lobe which is responsible for decision making. In this disease there is a significant involvement of Amyloid precursor protein (APP) gene leading to formation of  $\beta$ -Amyloid plaques and the tau protein neurofibrillary tangles, verily they have been found to be linked to the Small Ubiquitin-Like Modifier (SUMO). Recent studies have designated SUMO-1 marking inclusion bodies in nuclear and cytoplasmic region in familial neuronal intranuclear inclusion disease (NIID), dementia with Lewy bodies, Huntington's disease, supranuclear palsy with multiple system atrophy (MSA) with studded SUMO-1 structures in cytoplasmic inclusions assigned to trapped lysosomes. Studies have reported its presence in rotenone lesion model of Parkinson's disease, showing increased baseline SUMO-1 expression. Moreover, it is revealed from studies that the presence of SUMO-1 in vicinity to lysosomes is observed in various affected brain regions. Similarly, the mutations in one of the two consensus of the sites of Sumoylation aggravated  $\alpha$ -synuclein toxicity with reduction in the number of dopamine producing neurons in a Parkinson's disease rat model. In Huntington's disease, the pathological fragment huntingtin, was found to be modified by SUMO-1 where it was reducing formation of inclusion bodies. However, it was not reducing toxicity but was found to contribute to disease pathology, which meant that reduction of aggregated protein is not always associated with reduction in neurotoxicity. Treatment includes vaccination at the early age which prevented the formation of plaque and but SUMO-Targeted treatment is also required to effectively treat such disorders.

**PHY-PP-314****Extraction Methods of Natural Polymers used as Pharmaceutical Superdisintegrants****Subhajit Gain, Surajpal Verma**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
-144411,  
suvojitgain@gmail.com

Mother nature provided us a huge variety of components and materials to improve the health of living beings directly or indirectly. We, humans, enjoy the benefits from nature by isolating and extracting nature's valuable components as per our requirements. Most of the beneficial components are mainly collected from plant sources. These natural components are also precursors for several synthetic and semi-synthetic components, which has been widely used in pharmaceutical industries to produce pharmaceutical products. Gums and mucilage are the most useful natural substances. A vast variety of natural polymers are used as pharmaceutical excipients for improving the acceptability and efficacy of the drugs. Fast disintegrating tablets are one of the most popular dosage forms for providing quick action of active compounds. The superdisintegrants helps in inducing quick disintegration of these tablets. The natural superdisintegrants are bio-inert, non-toxic, less expensive, biodegradable and easily available as compare to synthetic superdisintegrants. Different extraction methods of natural superdisintegrants are available, but only some specific methods provide maximum yield with suitable quality. In this study, different extraction methods were performed for extraction of different natural superdisintegrants like Isabgol husk mucilage, Fenugreek seeds mucilage, *Hibiscus rosa-sinensis* leaf mucilage. The most suitable method was selected after studying the disintegration activity of these polymers.

**PHY-PP-315****Various Tissue Dysfunctions Due to Diabetes Mellitus: An Overview****Rahul Kumar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

rahuldelhi2510@gmail.com

Diabetes can be referred to as chronic disease characterized by high levels sugar (glucose) in the blood. Glucose enters the bloodstream, from food we eat. The beta cell of pancreas makes insulin, which plays vital role in transfer of glucose into cells after formation of GLUT vesicles. If there is decrease in release of insulin, and down regulation of insulin receptor substrates (IRS-1 or 2) or glucose transporters (GLUT), then an individual will suffer from diabetes mellitus. There are three major types of diabetes: (1) Type 1 Diabetes is caused by an autoimmune destruction of beta cell of the islets of Langerhans of pancreas, thus insulin production will be less. It is usually diagnosed in childhood and affected by hereditary. Patients need insulin daily to maintain glucose level. (2) Type 2 Diabetes is a result of reduced IRS sensitivity and down regulation of GLUT-4. It is the most common type of diabetes usually occurs in adulthood. The rates rising due to increased obesity and failure to exercise and healthy eating diet. (3) Gestational Diabetes- The blood sugar level is high during pregnancy. There is high risk of type 2 diabetes induced cardiovascular diseases. Diabetes can result in long term damage to vital organs, including circulatory system. Usually start with unhealthy eating habits and inadequate exercise. Fatigue, Blurred vision, dried and itchy skin, weight loss, hunger and frequent urination are some symptoms of diabetes. There are different ways that we can check. HbA1C test, fasting glucose test, a random glucose test and an oral glucose tolerance test are some examples of testing.



***PHY-PP-317***

**Need of ADR Monitoring of Herbal Medicines in Modern Era**

**Neha Heer, Meenu Mehta**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

hneha665@gmail.com

From past few years the use of herbal medicines has been increased due to the myth that they are completely safe and can be consumed by the people on his/her own, without a doctor's prescription. There is growing knowledge at several stages creates the requirement of pharmacovigilance practices for herbal medicines. Pharmacovigilance is practice of monitoring and collection of information from healthcare professionals and patients on the undesired effect of drugs including herbs and traditional drugs. An ADR is defined as a noxious and unintended response. WHO guidelines specify that ADRs reported with the use of herbal products are mainly because of lack in quality, adulterations, inappropriate usage etc. Multiple ingredients are present in the herbal products and its combination with conventional medication makes it as difficult to identify the exact agent causing the adverse reaction, for example Ephedra and aristolochia are herbal medicinal product can produce toxicity in human beings. Because of their regular use, there is need to raise the awareness among the doctor and paramedical staffs regarding the ADRs of herbal drugs.



**PHY-PP-318**

### **Bioenhancers - A Boon for Pharmaceutical Industry in the Commercialization**

**Palak Anand, Gargi Nanda**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

palakanand98@icloud.com

Bioenhancers are the natural source extracts which are used for bioavailability enhancement of active pharmaceutical ingredients, with which they are combined, without having any activity of its own. Though it has limitations in terms of regulatory compliance and large-scale production of bioenhancers, they are proved to be beneficial in many ways like dose reduction, compliance improvement, and drug resistance reduction. Through various researches, bioenhancers have proven to be a better option for augmenting drug bioavailability than other techniques like surfactants, nanosizing, nanoparticles and many more. Bioenhancers are classified on the basis of origin and mechanism of action. The concept of bioenhancers has proven to be a commercial success for drugs with low bioavailability. For example, drugs such as fucoidan (dietary supplement), resveratrol (metabolic supplement), isoniazid and rifampicin (anti-tubercular drugs) are being formulated and marketed with piperine (black pepper extract), and gingerol (ginger extract). Turmeric, used for many health benefits, is being used with ginger extract, so that the latter could block the PGP-efflux of Curcumin, thus increasing its bioavailability. Patents are being filed by companies for formulations incorporating bioenhancers like piperine, gingerol, curcumin and many more. Many types of research are going on for bioenhancers as being potential for bringing a revolution in the innovation for formulations of dosage forms and bringing a boost to the phyto-based Industries. This concept of bioenhancers has been a perfect example for integration of ancient system with today's medicine scenario.

**PHY-PP-322****Garlic (Allicin) from Spice to Medicine: An Overview****Bijay Kumar Yadav\*, Diksha Mankotia, Himaja, Rahul Prasher, Ravi Kumar, Ankit Kumar Yadav, Sachin Kumar Singh, Bhupendra Singh Tomar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

bkydev456@gmail.com

Garlic (*Allium sativum lin.*) is one of the most important constituents of food consumed worldwide. It is mainly used to enhance the flavor of food. In addition to the uses of garlic in food, it has major pharmacological activities such as anti-arthritis, anti-asthma, anti-cancer, prevention of common cold, atherosclerosis, heart attacks and diabetes due to its active chemical constituents. Garlic mainly contains allicin, ajoene diallyl disulfide, dithiin, s- allyl cysteine allyl propyl, diallyl trisulfide, S-allyl cysteine, allylmercaptocystein, and allin. It also contains a majority of enzymes like Allinase, myrosinase, and peroxidase. Out of all the active constituents present in the garlic, allicin is one of the most potent compound which has pharmacological activity against hypertension. Allicin can be successfully extracted from garlic, which is most commonly grown and cultivated in various parts of world from tropical to subtropical regions. Each gram of garlic contains nearly 2 to 3 mg of allicin. It is soluble and stable in 20 % alcohol and water. It is stable at cold temperature and slowly gets degraded when the temperature reaches above 27°C. However, stability of allicin can be enhanced by designing specific dosage forms for delivery of the same. Hypertension is one of the major problem of today's scenario. It ranks in the second position for the deaths reported due to it. Estonia, Romania, Guyana, Botswana and South Africa are top five countries ranking for hypertension. Allicin can be used alone and in combination with other synthetic drugs for the successful treatment in addition to the reduction in the side effects. In the present study, a systemic review containing extraction, stability, and delivery of allicin for the treatment of hypertension has been compiled and reported.



**PHY-PP-323**

### **Natural Bio-Enhancer; Need of Hour**

**Shubham Bhardwaj, Rajeshwar Verma, Vimal Arora**

IEC School of Pharmacy, IEC University, Baddi, Himachal Pradesh, India - 174103

shubhambhardwaj4u@gmail.com

The rise in the pharmaceutical sector during the past decade is majorly contributed by the application of natural poly-acids for their systematic bio-degradability or bio-compatibility which cause a significant increase in drug delivery. The most relevant problem associated with drug delivery system especially the targeted drug delivery is low bioavailability, a decrease in the rate of absorption and thus the increase in dose amount. For the most advanced form of drug delivery researchers have been working on numerous persisting and modified drug delivery systems to increase bioavailability and efficacy using bio-enhancer. Bio-enhancer is an agent capable of enhancing the bio-efficacy, bioavailability, and permeation of a particular drug. As per the literature, before the establishment of the world first bio-enhancer, i.e. piperine, a term bio-potentiators was used for agents which were co-administered with a drug to improve effectiveness and bioavailability. In 1930, Nobel laureate Albert S.G discovered bio-flavanoids; quercetin, genistein, and naringin that improve the activity of the drug. Many researchers have worked, discovered, identified and synthesized various natural and chemically non-toxic bio-enhancers which influenced different classes of drugs, like antibiotics, antitubercular, antiviral, antifungal, and anticancer. The best-known bio-enhancers are piperine, *quercetin*, *genistein*, *naringin*, and *cow urine distillate*. The synthetic bio-enhancers include surfactants, bile salts, chelating agents, and fatty acids. These are also known as absorption enhancers or permeation enhancers or penetration enhancers. Instead of being non-toxic in nature synthetic bio-enhancers have certain limitations which are overcome by natural bio-enhancers, influencing various classes of drugs.

**PHY-PP-324****Anticancer Activity of Garlic (*Allium Sativum*)****Kulvir Singh, Amarpal Singh, Ajitpal Singh**

St. Soldier Institute of Pharmacy, Jalandhar, Punjab, India - 144402

lally.kulvir@gmail.com

Garlic (*Allium sativum*, family: Liliaceae) has shown widespread pharmacological effects of its organo-sulfur compounds especially Allicin. Garlic is a bulbous plant; grows up to 1.2 m in height. It has acquired a reputation in different traditions as a prophylactic as well as the therapeutic medicinal plant. It has been found to contain a large number of potent bioactive compounds with anticancer properties, largely allyl-sulfide derivatives. Several modes of action have been proposed. These include its effect on drug metabolizing enzymes, antioxidant properties, and tumor growth inhibition. It has been observed that aged garlic extract has exhibited radical scavenging activity. The two major compounds in aged garlic extract i.e. S-allyl cysteine and S-alkyl mercapto-L-cysteine have the highest radical scavenging activity. In addition, some organosulfur compounds derived from garlic have been found to retard the growth of chemically induced and transplantable tumors in several animal models. Additionally, Garlic components modulate specific and nonspecific anti-tumor immunity. Further studies are needed to evaluate the pathophysiological mechanisms of action of garlic as well as its efficacy and safety.

**PHY-PP-325****Antidiabetic effect of Ginger****Gursharanjit Singh\*, Amarpal Singh and Ajitpal Singh**St. Soldier Institute of Pharmacy, Jalandhar, Punjab, India - 144402  
gursharanjit32@gmail.com

Diabetes mellitus is the most common endocrine disorder, causes many complications such as micro and macro vascular diseases. So, the increasing global prevalence of diabetes mellitus requires a holistic approach which is easy and cheap to apply for acceptability and affordability by all categories of people. Ginger, which is the rhizome of plant [*Zingiber officinalis*, zingiberacea] is herbaceous perennial plant which is used as a spice all over the world for its special pungency and typical aroma. Ant diabetic properties of ginger have been noticed in several researches. Clinical trials revealed that ginger supplementation lower blood glucose in patients with type 2 DM. It shows anti-diabetic therapeutic effect by increasing insulin sensitivity/synthesis, protecting beta cells of pancreas islets, reducing fat accumulation and increasing glucose uptake by tissue. Ginger contains some biological compounds including gingerol, shogaol, paradol, and gingerone. 6-Gingerol is the major constituent of ginger which shows antidiabetic properties potential. so, the ginger is a potential phytomedicine for the treatment of diabetes.

**PHY-PP-327****An Overview: Phytosomes as an Advanced Herbal Drug Delivery System**

**Gurmandeep Kaur<sup>\*</sup>, Yogita Kumari, Anshul Attri, Clarisse Ayinkamiye, Rinku Rozera, Nitin Kumar Bhatt, M.Himaja, Diksha Mankotia, Sachin Kumar Singh, Ankit Kumar Yadav, Bhupendra Singh Tomar, Jamshed Haneef**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India -144411

gurmandeep095@gmail.com

From the ancient times, herbal drug formulations are used worldwide and are well known for their eminent therapeutic activity with a very scarce number of side effects as compared to modern medicines of synthetic origin. Some of the well-proven activities of plant constituents such as flavonoids and other hydrophilic natural compounds for anti-aging properties, treatment of skin disorders and various types of carcinoma have been proved in pre-clinical and advanced biochemical studies. However, the traditional delivery systems of herbal compounds suffer from several limitations such as poor solubility and bioavailability. To overcome these problems, a novel approach in the form of Phytosome is presented in the current study. The term “Phyto” means plants and “Some” means cell-like, in which the herbal phytoconstituents are enveloped and bound by lipid (basically a phospholipid). Phytosomes are basically a novel vesicular drug delivery system mainly prepared by solvent evaporation methods. It protects the valuable phytoconstituent of herbal extract from degradation by the microbial fauna present in the gut as well as from the digestive secretions. Since the water solubility and outer layer which is lipophilic, these phytosomes exhibits enhanced absorption which results in improved bioavailability than that of the conventional herbal extracts. Phytosomes enhances the absorption topically as well as orally. Various active constituents of drugs like *gingko biloba* (*bilobalide*), *curcuma longa* (*curcumin*), *grape seed* and *ginseng* have been subjected to complexation with phospholipid to get enhanced absorption along with improved bioavailability. These phytosomes can be developed for the therapeutic purpose and as a dietary supplement for prophylactic and curative use.



**PHY-PP-328**

### **An Overview of Medical Applications of *Ocimum Sanctum***

**Harish Babbar, Mayukh Banerjee, Ankit Kumar Yadav**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

harishbabbar1111@gmail.com

According to recent surveys stress-related issues in the society are increasing globally at a rapid pace. High mortality and morbidity can be directly linked to the stress causing multiple lifestyle-related chronic ailments. This issue can be addressed either by changing lifestyle, daily habits or by incorporating potent adaptogenic substances into the diet. *Ocimum sanctum* indigenous herb to the Indian subcontinent and has been incorporated into Ayurvedic traditional medicine system since time immemorial. There is increasing evidence that *Ocimum sanctum* can take care of chemical, physical, psychological and metabolic stress due to its specific mechanisms and pharmacological actions. It is rich in multiple phenolic compounds like circimaritin, crisilineol, isothymusin, rosameric acid and apigenin which are potent antioxidants. The volatile oil extracted from the leaves of *Ocimum sanctum* contains 71% eugenol, flavonoids and vicenin and orientin. The various pharmacologic activities observed for *Ocimum sanctum* are anticancer, antidiabetic, antilipidemic, antimicrobial, antifertility, mosquitocidal, antiallergic, immunomodulatory, antitussive, antiemetic, antispasmodic, antiarthritic, antipyretic, diaphoretic and anticoagulant. *Ocimum sanctum* protects the body internally from damages from external toxins and various toxicants as well. Multiple researchers have proven the radioprotective, chemoprotective, neuroprotective and also cardioprotective activity of *Ocimum sanctum*. The most important use of *Ocimum sanctum* is its adaptogenic potential which possesses psychotherapeutic properties that help to reduce depression and stress. This study aims to prove why *Ocimum sanctum* is a potent adaptogenic drug and further research needs to be carried out in order to prove its beneficial effects further.



**PHY-PP-329**

### **Nutraceutical Properties of Food**

**Harmeet Kaur, Iqbaljit Kaur**

Lovely Professional University, Phagwara, Jalandhar, Punjab, India - 144411  
iqbal.21959@lpu.co.in

In recent years, the eating habits of people have been changed which includes eating a lot of junk food and diet containing a high amount of cholesterol. Consumption of junk food has led to many diseases like cardiovascular problems, diabetes, obesity etc. People suffering from these problems desire inexpensive treatment approach or an alternative to harmful modern medicines for which nutraceuticals is the only answer. Nutraceuticals main aim is to promote the use of more and more of natural food and herbs. According to Hippocrates's famous quote, "Let food be thy medicine and medicine be thy food" - which means "food is medicine". Nutraceutical is the combination of 'nutrition' and 'pharmaceutical'. It basically includes the food which not only provides nutrition to the body but also maintains the normal physiological functions and prevents diseases. They are also regarded as 'functional foods'. They have been associated with treating various diseases like cancer, hypertension, diabetes, cardiovascular diseases, osteoporosis, arthritis and neural tube defects. These functional foods mainly contain antioxidants, probiotics, omega-3 fatty acids, some phytochemical, and dietary fibers. It has led to the new revolution in medicine and health. As a whole, nutraceuticals have taught us to take food as our medicine so that we don't need to take medicine as our food in future.

**PHY-PP-330*****Terminalia chebula*: A Potent Phytochemical Compound for The Treatment of Diabetes Mellitus****M. Himaja, Diksha Mankotia, Mayukh Banerjee, Rahul Prasher, Ankit Kumar Yadav, Sachin Kumar Singh, Bhupendra Singh Tomar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India-144411

mulehimajareddy08@gmail.com

Diabetes mellitus is a chronic metabolic disorder occurs due to decreased production of insulin by the beta cells of islets of Langerhans and or the loss of the glucose uptake capacity of the body cells. According to latest reports of WHO, diabetes is the seventh leading cause of death occurs worldwide form the last few years and it has also increased the economic burden of the globe. For the maintenance of blood glucose level, there are many synthetic drugs available in the market but they suffer from one to another limitation which includes hypoglycaemia, damage to kidney, liver and lactic acidosis. These problems are associated with drugs which may be due to their synthetic property. In order to overcome these problems an alternative approach of using drugs herbal origin has been suggested. *Terminalia chebula* belonging to the family Combretaceae is rich in tannins, vitamin C, gallic acid, ellagic acid, anthraquinones, triterpenoids and other miscellaneous compounds. It has a wide range of biological and medicinal use with low or negligible adverse reaction and also at a low cost of therapy for the maintenance of diabetes mellitus. Y.K. Murali et. al., 2007, had reported the successful treatment of streptozotocin induced diabetic rats by using chloroform and aqueous extract of powder of *Terminalia Chebula* seed and fruits. The antidiabetic activity of *Terminalia Chebula* has also been compared with the drugs of synthetic origin like tolbutamide others and found to be satisfactory. As *Terminalia chebula* has multiple phytoconstituents and it have the ability to reduce diabetes and hence it needs to be incorporated into both conventional and novel drug delivery systems for the treatment of the larger diabetic population and to reduce the side effects associated to the conventional therapy.



**PHY-PP-331**

### **Nanoparticles Based Herbal Nutraceuticals for Treatment of Cancer**

**Ayinkamiye Clarisse, Yogita Kumari, Gurmandeep Kaur, Anshul Attri, Diksha Mankotia, Sachin Kumar Singh, Ankit Kumar Yadav, Bhupinder Singh Tomar, and Jamshed Haneef**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

mulindaclarisse@gmail.com

Over the past few years, nutraceuticals have gained importance in day to day life. They are being used for the improvement of life expectancy. Other than their use in the day to day life, nutraceuticals are also one of the major parts in preventing and treatment of some chronic illness like cancer, diabetes, and vitamin deficiency. Modern nutraceuticals contain the major constituents which possess anti-inflammatory, anti-anemic and other activities. Anti-inflammatory activity of nutraceuticals helps out in suppressing proinflammatory pathways thus contributes in the treatment of cancer. The major category of nutraceuticals in the market is now a day's belongs to the herbal category and the basic limitation with the herbal products is their stability and bioavailability. Nutraceuticals alone possess low bioavailability; hence their absorption in human body is poor. In the present study, an overview of a novel approach for the preparation of herbal nutraceuticals based on nanoparticles and their application in the treatment of diseases proves that nanoparticles (NPs) based herbal nutraceuticals are expected to have improved absorption and distribution using polymer-based NPs. These nutraceuticals are obtained from vegetables, legumes, vitamins, spices and fruits. Quercetin which belongs to polyphenolic flavanoid group is present in abundant in legumes, fruits, and grains and is one of the nutraceuticals which has been approved to have nano-chemoprevention, and nano-chemotherapy property. Polyphenols group of nutraceuticals has shown anti-inflammatory activities, as a result, they are effective in cancer therapy.



***PHY-PP-332***

### **Pharmacogenomics: A Boon or Boom in The Development of Personalized Medicines**

**Shyam Bass, Jayprakash Gupta, Ankit Kumar Yadav**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

shyambass0925@gmail.com

Pharmacogenomics is the study which deals with a person's genetic makeup and its relation to the response of a drug molecule. Drug recipients show a wide diversity in the responses to a drug molecule due to variation in the genetic makeup of the individuals. Variability in the genetic behavior of individuals may result in altered pharmacokinetics and pharmacodynamics of a drug molecule, which may further result in unexpected adverse drug reactions. As the absorption, distribution, metabolism, and excretion (ADME) of therapeutic entities is dependent upon various factors such as age, sex, food, ethnicity, and genetic variations. All these factors can be controlled by the individual receiving the treatment except the genetic variations and here is the application of pharmacogenomics in drug designing. The genomic study allows the selection of molecular entities of a drug to be given to right person at the right dose in right time and at the right cost. Researchers use genetic information to diagnose disease occurring pathways and create specific drug molecules likely-to-respond in the specific population. The aim of pharmacogenomics study is to emphasize the difference between patients, their variable molecular entities such as DNA, RNA, and protein to gather information about individual variability upon responses to administered drugs. In the upcoming time, the medicinal practitioner will be able to routinely use the gathered information about the genetic makeup to select those drugs and their doses which offers the greatest chance of helping life. Besides improving the ways in which existing drugs are used, genome research will lead to the development of better drugs with fewer side effects. In the present study, a systematic review of the pharmacogenomics and its applications in designing personalized medication is summarized and reported.

**PHY-PP-333****An Overview of Green Synthesis of Gold Nanoparticles Using *Eclipta Alba* Leaves**

**Yogita Kumari, Gurmandeep Kaur, Anshul Attri, Clarisse Ayinkamiye, Rinku Rozera, Nitin Kumar Bhatt, M. Himaja, Sachin Kumar Singh, Ankit Kumar Yadav, Bhupendra Singh Tomar, Jamshed Haneef**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

kyogita72@gmail.com

Synthesis of gold nanoparticles (AuNPs) using conventional synthetic methods favours many advantages as they are being used in many theranostic activities. However, they have some limitations such as the toxicity due to the use of different chemicals in the preparation and later the stability of the AuNPs is an area of concern. To overcome these limitations, green method came into existence that leads to the synthesis of AuNPs using various bio-resources. Green methods offer various advantages as they are eco-friendly, cost-effective, efficient and take less time for synthesis. Further, they lead to the production of biocompatible and environmentally sustainable AuNPs. Green synthesized nanoparticles have various applications in the treatment of cancer, PT therapy, CT imaging, and *in vitro* - *in vivo* correlation studies. The current study focuses on extraction technique of *Eclipta alba* leaves (commonly known as *bhringraj*) used for synthesizing AuNPs and the future biomedical applications of biologically synthesized AuNPs. Bhringraj is an ayurvedic medicinal herb which is used for longevity, cirrhosis, and hair care. Prepared AuNPs were characterized using different techniques (XRD, TEM, FTIR, and DLS). Toxicity of green synthesized nanoparticles was also found to be less. Proteins and phenols present in the EA extract are useful for stabilization and reduction of nanoparticles. Biocompatibility and stability of biologically synthesized nanoparticles was carried out using buffer solution and in-vitro cell culture. Green synthesized nanoparticles conjugated with doxorubicin were reported for the inhibition of breast cancer cells.



**PHY-PP-334**

### **Traditional Knowledge Digital Library**

**Luqman Ibni Yaseen, Meenu Mehta**

School of Pharmaceutical sciences, Lovely Professional University, Phagwara, Punjab, India  
-144411

luckystrend@gmail.com

Traditional Knowledge is a knowledge system possessed among various communities across the globe. Such knowledge has been accumulated over a year, used and passed down through several generations. It is usually with respect to the natural surroundings of the community such as manner of cultivation, environmental knowledge and knowledge of natural medicines. India is a party to the United Nation Convention on Biological Diversity by virtue of which it enacted the Biological Diversity Act 2002. The act aims at the conservation of biological diversity, sustainable use, fair and equitable sharing of the benefits of biological resources. The act provides for the establishment of a National Biodiversity Authority in order to protect the invaluable treasure of Indian Biodiversity. Besides, the government of India has also established the Traditional Knowledge Digital Library (TKDL) for the protection of Indian traditional knowledge. The TKDL is a joint effort of the Council of Scientific and Industrial Research and the Department of Ayurveda, Yoga and Neuropathy, Siddha and Homeopathy. It enables effective detection of attempts to misappropriate this knowledge by third parties filling applications with patent office around the world. TKDL has been proved to be a major tool to protect traditional knowledge. However, TKDL does not cover indigenous knowledge. This paper highlights that either TKDL may include indigenous knowledge in its database or optionally a comprehensive and confidential database separately for indigenous, tribal and nomadic communities. TKDL has done wonderful job by raising objections before patent offices. However, patents have been obtained by persons abroad by slight manipulations in claims such as a composition, formulation or preparations wherein the claimed herb with known property constitutes the major ingredient. TKDL needs to identify such attempts and register opposition against such patents granted in prescribed manner before respective patent offices.



**PHY-PP-335**

### **Herbal Cosmetics and Cosmeceuticals**

**Rahul Verma, Charanjit Kaur, Ankush Sharma, Chandani Kumari**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411  
gopildh@gmail.com

Cosmeceuticals are hybrid products of cosmetic-pharmaceutical meant to develop the beauty and health of the skin by enhancing protection from acne, wrinkles & sunlight. Cosmeceuticals have curative benefits which alter the metabolic processes of skin depending upon the type of additives. Herbal cosmetics are formulated, using various additives to which herbal ingredients are added to treat numerous skin ailments without using the harmful synthetic chemicals which are toxic to the skin like coal tar, which is a cancer-causing color. Natural cosmetics are safe to use in comparison to synthetic ones and are appropriate for all skin types. The natural phyto-compounds used have no adverse effects thus it has universal application. Herbal cosmetics contain natural antioxidants like vitamin C. These are beneficial not only for beautification but also for the treatment of various skin diseases. These products enhance the functioning/texture of the skin by promoting the development of collagen tissue and by eliminating destructive effects of free radicals, maintaining the structure of keratin and making the skin healthier. These are inexpensive products and are more affordable than synthetic ones. Natural cosmetics offer a variety of beauty products for the consumers. There are a lot of herbs having a distinct use in cosmetic preparations for hair care, skin care and as antioxidants. However, these are not need to undergo pre-clinical trials. These natural formulations are testified by experts in laboratories using state of the art equipment without animal testing. The demand for herbal cosmetic is swiftly increasing because of the immense potential of herbal cosmetics, the herbal extracts used in their formulation and their benefits over the synthetic compounds.



**PHY-PP-336**

### **Potential Role of *Carica Papaya* Leaf Extract in Treatment of Dengue Infection**

**Bashir Usman and Navneet Khurana**

School of Pharmaceutical Sciences, Lovely Professional University, Jalandhar, Punjab, India  
- 144411

bashirusman94@gmail.com

Dengue infection is the most rapidly spreading mosquito-borne viral disease in the world. It is caused by single stranded RNA, one of the four serotypes (DEN1-4). Severity of the infection is accompanied by complications such as encephalopathy, encephalitis liver failure, myocarditis, thrombocytopenia, and peripheral destruction of platelets. The treatment remains the major challenge due to non-availability of effective drug against dengue virus, though some vaccines against dengue virus has reached phase III of clinical trials. However, *Carica papaya* belonging to family Caricaceae, is proved to be effective and safe in both preclinical and clinical studies for treatment of dengue infection and its associated complication, thrombocytopenia. The leaf extra contains triterpenoids, flavonoids alkaloids, tannin and saponin. *In silico* investigation revealed that some of its constituents possess inhibitory activity against dengue virus. The leaf extract may be acting by induction of thrombopoietic cytokines synthesis in hematopoietic system, increasing the expression of arachidonate 12-lipoxygenase, 12S-type and platelet-activating factor receptor genes, or directly on the virus. *Carica papaya* leaf extract is having great potential in therapy of thrombocytopenia induced in dengue infection.



***PHY-PP-337***

### **Recent Advancement in the Development of Advanced Self- Diagnostic Device**

**Mohammed Zakir Hussain\***

Faculty of Applied Medical Science, Lovely Professional University, Phagwara, Punjab, India - 144411

zhussain261@gmail.com

The dawn of technology has made life much easier and convenient. By looking around, it is quite pertinent that there is a circle of technology and usage of number of gadgets. Life is undoubtedly very busy and limited time to take care of our precious health. The current study focused on some of the self-diagnostic devices which are very easy to use similar to phones. These devices have key roles in taking care of health issues. These devices help us to detect a number of diseases, which will lead to fewer medical expenses and can be used in any condition. These also provide guidance, gives advice, methods on the day to day basis to keep a check on health issues. These devices have been tested in a variety of parameter and can contribute to the needs of medicine, medical specialty analysis, and environmental observation.



**PHY-PP-338**

### **Paracetamol (Acetaminophen) Poisoning**

**Madhu Verma**

School of pharmaceutical Science, Lovely Professional University, Phagwara, Punjab-India - 144411

Madhuverma948@gmail.com

Paracetamol is used as an Analgesic and Antipyretic since it is most common drug in self poisoning which leads to condition of high rate of being diseased i.e. morbidity and mortality, As it is metabolized in the liver through three pathways- glucuronidation, sulfation or through the hepatic cytochrome p450 enzyme system. The toxic effects of paracetamol are due to hepatotoxic metabolite i.e. N-acetyl-p-benzoquinimine (NAPQI) which can cause serious liver injury because of Paracetamol overdose. To manage paracetamol poisoning estimation of hepatotoxicity and early treatment is very crucial. Acetylcysteine known as N- acetyl cysteine(NAC) is an antidote that is used for the treatment of paracetamol overdose. Rumack-Mathew Nomogram is a graphical representation, Acetaminophen concentration in relation to time after ingestion. As it is available in PO and IV form which is cost effective having very few side effects whereas it is also treated with activated Charcoal and by transplanting liver.

**PHY-PP-340****Method Development for Simultaneous Estimation of Glimpiride and Simvastatin by Using Reversed-Phase High-Performance Liquid Chromatography****Narendra Kumar Pandey\***, Sachin Kumar Singh, Bimlesh Kumar, Monica Gulati, Saurabh Singh, Pankaj Kumar, Sattar Hawari, Rajan Kumar

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India – 144411

narendra.pandey@lpu.co.in

The aim of the present investigation was to develop a suitable, simple, precise, accurate, robust, and reproducible RP-HPLC method for a reliable simultaneous estimation of glimepiride and simvastatin. The separation was carried out on a Nucleodur C18 column (Reverse phase, 250 mm × 4.6 mm, 5 µm particle size) at 1 mL/min flow rate and injection volume was 20 µL. The eluent was monitored at 228 and 238 nm for simultaneous measurement of glimepiride and simvastatin, respectively, using photodiode array detector. Optimization of the chromatographic conditions was intended to take into account that various goals parameters of method development. The chromatographic conditions were optimized by changing the mobile phase and their compositions, flow rate and pH of buffers used. After a number of attempts, a chromatographic condition which has the ability to resolve glimepiride and simvastatin from mixture at different retention times was achieved. A combination of acetonitrile and 20 mM ammonium acetate buffer (pH 5.0) in the ratio of 90:10 (v/v) was used as mobile phase in an isocratic mode of elution. The obtained retention time for glimepiride and simvastatin was 4.256 and 9.829 min, respectively.

***PHY-PP-341*****Molecular Structural Requirements for Dual Inhibition of MDM2 And MDM4 for The Discovery of Novel Anticancer Agents****Suprava Shah, Gopal L. Khatik, Rakesh Narang, Surendra Kumar Nayak**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

shahsuprava1@gmail.com

p53 is a tumor suppressor which is already present in our body. Mutation in p53 gene or interaction of Mdm2 and Mdm4 with p53 may result in cancer development. Mdm2 and Mdm4 are the protein-coding genes which inhibit the activity of p53 by binding separately to its transactivation domain. Mdm2 and Mdm4 are important targets for drugs to inhibit their binding with p53. Simultaneous inhibition of both Mdm2 and Mdm4 is more effective strategy than inhibiting them individually. Compounds which can inhibit the activity of Mdm2 like benzodiazepidione derivatives, nutlin-3 (cis-imidazole) have been discovered whereas the discoveries of the compounds that act as inhibitors for both Mdm2 and Mdm4 are still under process. Here, we reported the structural requirement for dual inhibition of Mdm2 and Mdm4 to retain the active form tumor suppressor p53.

**PHY-PP-343****Animal Models of Neuropathic Pain: A Mirror of Human Response to Nerve Injury****Bimlesh Kumar<sup>1</sup>, Sachin Kumar Singh<sup>1</sup>, Narendra Kumar Pandey<sup>1</sup>, Saurabh Singh<sup>1</sup>, Sakshi Panchal<sup>1</sup>, Indu Melkani<sup>1</sup>, Monica Gulati<sup>1</sup>, Amit Bhatia<sup>2</sup>, T Prakash<sup>3</sup>**<sup>1</sup>School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India – 144411<sup>2</sup>Amity Institute of Pharmacy, Amity University, Noida, Uttar Pradesh, India - 201303<sup>3</sup>Department of Physiology and Pharmacology, Acharya and B.M. Reddy College of Pharmacy, Soladeuanahalli Hesargatta Road, Chikkabanawara Post, Bangalore, Karnataka, India - 560 090

bimlesh.12474@lpu.co.in

To select therapeutics for the neuropathic pain (NP), it is important to know the underlying pathophysiology. In all animal models (Axotomy, Chronic constriction injury (CCI), Partial sciatic ligature, Spinal roots ligation, Nerve-sparing injury, Tibial and Sural nerve transection, Sciatic inflammatory neuritis, drug-induced NP by vincristine, cisplatin, oxaliplatin, paclitaxel, 2,3- dideoxycytidine, diabetic neuropathy by streptozotocin, alcoholic neuropathy, Pyridoxine-induced neuropathy, Trigeminal neuralgia and Acrylamide-induced), it is very difficult to understand what actually animals perceived, furthermore altered cutaneous sensory thresholds in response to peripheral nerve injury rather than integrated pain are measured. Hence there is requirement of measurable and reproducible integrated behavioural pain responses. Ideal models should produce sensory deficits, such as allodynia, hyperalgesia and spontaneous pain for short periods of time. Models based on ligation of peripheral nerves are the most commonly used to justify the characteristics of NP that are mirror to nerve injury same as happens in humans. CCI is one of the most suitable model, significantly causes the oxidative damage as indicated by the rise in lipid peroxidation, nitrite concentration and decreased cellular anti-oxidant defense system such as glutathione and catalase activity. Hence, research using various animal models resulted in the formulation and development of newer therapeutic agents to treat NP and the obtained preclinical data have been successively used for pain management in clinical setup of NP. Therefore, this presentation will focus on models of NP with their mechanism.

**PHY-PP-344****Traditional Indian Medicinal Plants and Its Isolated Components as an Alternative Therapy for The Management of Diabetic Neuropathy****Sakshi Panchal, Indu Melkani, Maninder Kaur, Bimlesh Kumar, Sachin Kumar Singh, Monica Gulati, Narendra Kumar Pandey, Saurabh Singh**School of Pharmaceutical Sciences, Lovely Professional University, Jalandhar, Punjab, India  
[bimlesh1pharm@gmail.com](mailto:bimlesh1pharm@gmail.com)

Neuropathic pain (NP) is one of the complex and chronic state of pain, which demonstrates damage of somatosensory nervous system (e.g. diabetic neuropathy). Diabetic neuropathy (DNP) constitutes a challenge not only to the medical science but also to the current drug treatment as these synthetic drug treatments represents several side effects (numbness, tingling, burning, incontinence, loss of sensation) on the cost of their pharmacological effect. To resolve these issues, there is a requirement to understand the underlying causes of DNP. Recently, many medical professionals had shown their interest towards complementary and alternative medicine. By identifying natural neuroprotective agents from plant origin, can replace the synthetic drugs (Duloxetine, Amitriptyline, Gabapentin). Phytochemicals for example  $\alpha$ -amyrin,  $\beta$ -amyrin,  $\beta$ -caryophyllene, Cannabidiol, Genistein, Hesperetin, Kaempferol, Lappaconitine, Linalool, Liquiritigenin, Luteolin, Mangiferin, Naringin and Tormentic acid were found to have great accessibility in addition to their antioxidant activity, DNA modulation effect and immune system stimulation in the treatment of NP. There are the plants like *Cannabis sativa* (d-9- tetrahydrocannabinol, LD<sub>50</sub> of 3 g/kg), *Ecklonia cava* (2000 mg/kg), *Hygrophila spinosa* (2000 mg/kg) and *Momordica charantia* (2000 mg/kg) are extensively used in DNP in India. Hence the present review focuses on safer, easily available effective treatment for DNP.

**PHY-PP-345****Development of Oral Colon Targeted Delivery System of Sulfasalazine in The Combination with Curcumin for The Treatment of Colonic Ulcer****Shubham Kumar Sinha, Jashandeep Singh, Mayukh Banerjee, Ankit Kumar Yadav, Sachin Kumar Singh, and Amit Mittal**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

shubhamsinha03@gmail.com

Ulcerative colitis is a chronic bowel disorder characterized by inflammation of colonic mucosa, the most common symptoms of UC are diarrhoea, blood in the stools and abdominal pain. UC is most commonly found in adulthood between the age of 15-35 year. Treatment of UC is increasing with the advancement in the medical field. In India, the prevalence rate is about 44.3 per 100,000 people are suffered from UC. Globally the annual medication cost of UC is \$7948 per patient. Colon targeted drug delivery system are one of the novel ways to treat the UC in a combination of sulfasalazine and curcumin, Sulfasalazine, a Non-Steroidal anti-inflammatory (NSAIDs) class of drug was selected due to its effectiveness in combating various inflammatory bowel diseases including Crohn's disease and ulcerative colitis. Practically it reduces the symptoms of inflammation, rectal bleeding, stomach pain, and fever. The mechanism of action of sulfasalazine is still unclear but it used as an anti-inflammatory and an immunomodulator. Colon targeted drug delivery system (CTDDS) is a systemic way to deliver the drug into the specific part of the body so that the desired drug concentration can be achieved in time. It is a suitable way to deliver the drug by reducing side effect to release the drug into the body during the flare of the pain. In this research, five different batches (B1, B2, B3, B4, B5) of coated and uncoated tablets were prepared by direct compression method by varying the use of excipients such as guar gum, pectin, eudragit S 100, talc, and magnesium stearate. Out of the five batches, B5 showed better release profile for percentage drug dissolve after 5h of dissolution in form of tablets for the treatment of UC.

**PHY-PP-346****Development of Analytical Method for Simultaneous Estimation of Sulfasalazine and Curcumin Using Uv-Visible Spectrophotometer****Mayukh Banerjee\*, Divya Sikerwar, Shubham Kumar Sinha, Ankit Kumar Yadav and Sachin Kumar Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India -144411

mayukh.banerjee93@gmail.com

The pro-drug sulfasalazine (SUL) and phytochemical curcumin (CUR) are widely used in the treatment of disease like inflammatory bowel disorders and rheumatoid arthritis. CUR is known as nature's wonder drug, producing multiple beneficial effects within the body, and is also a rich anti-oxidant. In combination, SUL and CUR possess anti-inflammatory and anti-ulcer properties which can be successfully used in the treatment of chronic inflammatory diseases like Ulcerative colitis. A simple and stable simultaneous UV-Vis spectroscopy method was developed using methanol as a solvent taking 359 nm and 417 nm as wavelength for SUL and CUR, respectively. The calibration curve for both drugs was found linear at concentration range 2-10 µg/ml and the R<sup>2</sup> values were 1 and 0.9998 for SUL and CUR, respectively. The absorbances and the molar absorptivities were calculated for both the drugs at selected wavelengths and the concentrations were calculated by the simultaneous method equation. The developed simultaneous method was found to be simple, reliable and robust and can be applied quality control laboratories.



**PHY-PP-347**

### **Medical Applications of Capsicum: An Overview**

**Rupinder Kaur\*, Jayprakash Gupta, Saumya Darshana Shikha, Geetanjali Mehra, Shubham Kumar Sinha, Mayukh Banerjee, and Ankit Kumar Yadav**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

kaur04103@gmail.com

Capsicum also known as pepper is one of the most important constituent of spices used in the food around the globe. It is a genus of flowering plants belonging to the nightshade family *Solanaceae*. Capsicum possess “hot and spicy pungent” taste due to the availability of capsaicin. Other than the taste and flavor, capsaicin possess pharmacological activities which can be used in the mitigation and cure of various physiological problems such as inflammation, pain, obesity, cardiovascular diseases, neurogenic bladder, gastrointestinal irritation, dermatological problems and tumors. It can also be used as a counterirritant, analgesic, antiarthritis and antioxidant. Pharmacological activity of capsaicin is based on dose, route of administration and its concentration at the target site. Capsaicin can be extracted from capsicum using percolation method by dissolving either in hot acetone or hot ethanol. Synthesis of capsaicin requires the aid of capsaicin synthase through condensation of vanillylamine, a phenyl propanoid pathway intermediate and fatty acid moieties in placental tissues of Capsicum fruits. Understanding of pharmacological activity of capsaicin leads to the discovery of its receptor, transient receptor potential vanilloid subfamily member 1 (TRPV1). This receptor is located on sensory afferents so the capsaicin selectively activates pain afferents which has been studied in animal and human models for various indications. Adverse effects of capsaicin such as mucosal and gastrointestinal irritation (heart burns or acidity) have been reported. Novel drug delivery strategies need to be searched in order to improve the bioavailability, safety margin of capsaicin and its applications in the medical field.



**PHY-PP-348**

**A Review: *Cannabis* and Its Advantages in Medicinal Field**

**Jayprakash Gupta\*, Geetanjali Mehra, Rupinder Kuar, Saumya Darshna Shikha, Ankit Kumar Yadav, Sachin Kumar Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

[jayprakashgupta261@gmail.com](mailto:jayprakashgupta261@gmail.com)

*Cannabis* also known as marijuana, has been used as hallucinogenic, hypnotic, sedative, analgesics and anti-inflammatory agent in traditional medicinal system of India. *Cannabis* is mainly found in the tropical and temperate regions of the world like central Asia and Indian subcontinent. According to the literatures, around 60,400 kilograms of *cannabis* is being produced legally every year around the globe. It contains around 483 active chemical constituents with 65 cannabinoids and out of them, delta 9- tetrahydrocannabinol (THC), alpha-pinene, myrcene, alpha-humulene are the main constituents responsible for its medicinal properties. It can be used through many ways like smoking, vaporizing, within food or as an extract. Since hundreds of years, it has been used for medicinal purposes and nowadays pharmaceutical preparations containing cannabinoid have been developed which are being used for treatment of chronic/acute pain, nausea, rheumatoid arthritis, HIV, cancer and neuropathic pain. Cannabinoid based medicines (CBM) have gained importance in the medicinal field due to its psychoactive constituent THC. It acts by attaching with the specific receptor of the body (CB1 and CB2) and specific ligands-endocannabinoids such as anandamide (arachidonylethanolamide and 2-arachidonoylglycerol). Cannabinoid THC (dornabinol, nibilone) and the cannabis extract nabiximols, which contains THC:cannabinoid in ratio of 1:1 – has been approved for the clinical treatment of nausea, cancer chemotherapy, anorexia and in HIV/AIDS. In current studies, it has been found that the active constituents of the cannabis (THC) is effective in the treatment of Tourette syndrome (childhood-onset neuropsychiatric disorder) and epilepsy. Overdose of raw *cannabis* can lead to side effects like red eyes, dry mouth, addiction, decreased mental ability in children whose mother used cannabis during pregnancy. However, *Cannabis* can be lifesaving medicine if used under the supervision of a medical practitioner.

**PHY-PP-349****A Review Based on Anti-Diabetic Potential of *Moringa Oleifera*****Tashi Tenzin, Prakhar Bhadauriya, Takdeer Singh, Priya Kumari, Manish Vyas**School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

tashixtra@gmail.com

The incidence of diabetes is increasing in the developing world. As diabetes is a multifactorial disease, its treatment is complicated and requires multiple therapeutic strategies. The therapeutic management of diabetes without any side effects remains a challenge. In response, there is a growing interest in evaluating herbal remedies, which are seen to be less toxic and to have negligible side effects. *Moringa oleifera* commonly as drumstick belonging to family Moringaceae is indigenous to the Indian subcontinent and is widely used in Ayurvedic medicine for the treatment of diabetes, cardiac and circulation problems. Various studies based on the *Moringa oleifera* revealed that it is anti-diabetic, anti-oxidant, anti-bacterial, anti-inflammatory, anti-ulcer, cardiac and circulatory stimulant. Different parts of this plant have a nutritional profile of essentials minerals, protein, vitamins,  $\beta$ -carotene, and amino acids. *Moringa oleifera* plant provides a rich and rare combination of zeatin, quercetin,  $\beta$  sitosterol, caffeoylquinic acid and kaempferol. Various *in-vitro* and *in-vivo* studies revealed that moringa leaves significantly decrease blood glucose concentration in Wistar rats and Goto-Kakizaki rats. The current review will focus on phytochemical composition, therapeutical potency, uses of *Moringa oleifera* and the recent findings in the treatment of diabetes using *M. oleifera*. Thus, the magical tree- *Moringa oleifera* bears the enormous potential in treating diabetes and can be claimed as potent therapeutic target for diabetes.

**PHY-PP-350****Cigarette Butts: An Environmental Burden and Its Unique Solution****Rahul Prasher, Diksha Mankotia, Mayukh Banerjee, M. Himaja, Shubham Kumar Sinha, Shyam Bass, Ankit Kumar Yadav, Sachin Kumar Singh and Amit Mittal**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India -144411

rahulprasher1992@gmail.com

Discarded cigarette butts also known as filters are a form of photodegradable but non-biodegradable litters, scattered as runoff from houses to street to drains to rivers and finally dumped into the ocean and later collected on sea beaches. It has been reported by the various agencies that cigarette butts are the most collected waste items on the international beaches and requires clean ups every year with the investment of huge cost of health and wealth both. Cigarette butts are an environmental burden founds on streets, sidewalks, beaches and later stages they are primarily participating in soil and water causing huge pollution to both. Most cigarette butts are made up of cellulose acetate. There are about 4000 chemicals present in cigarette smoke goes through the butts in which 3000 are present in gas form, rest 1000 present in tar form. Out of which polycyclic aromatic hydrocarbon, aromatic amines, N-nitrosamines, formaldehyde, benzene, acetaldehyde and heavy metals such as nickel and cadmium are known to be carcinogenic. On an average over 5.6 trillion cigarette butts can be found in nature every year. To reduce the worldwide burden of the cigarette butts, an inventive approach of the production of construction bricks incorporating cigarette butts have been proposed. The incorporation of cigarette butts into bricks used for construction can be helpful in two ways: 1) These bricks can solve the issue of cigarette butts litter worldwide by incorporating recycled cigarette butts into bricks without any fear of contamination or leaching into environment 2) These bricks can be cheaper and environment friendly to produce than normal bricks produced by raw material extracted from natural resources. Further, cigarette butts incorporated bricks are lightweight construction material, which leads to less transportation cost. However, further studies for the tensile strength, safety and shelf life has to be conducted to convert this dream to reality.



**PHY-PP-352**

### **Malaria and Artemisinin: An Update**

**Arvinder Kaur, Meenu Mehta**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

ravirandhawa7865@gmail.com

Artemisinin is a semi-synthetic derivative, are a group of drugs used against plasmodium falciparum malaria. Malaria is a serious or sometimes fatal disease caused by a parasite that infect a type of mosquito which feeds on humans. Once an infected mosquito bites a human the parasites multiply in the host's liver before infecting the RBCs. Parasite plasmodium falciparum results in severe infection and may leads to death. Artemisinin was discovered by Tu Youyou, a Chinese scientist in 1972, who got noble prize for her medicine discovery in 2015. The plant name is "Artemisia annua" (Sweet wormwood) and it is distilled from the leaves and flower cluster of the plant. Chemically Artemisinin is a sesquiterpene lactone" (a compound made up of 3 isoprene units bound to cyclic organic ester) containing an unusual peroxide bridge. Artemisinin is also called "Qinghaosu" an active agent isolated from the plant and then known as Artemisinin. The antipyretic properties of this plant were recognized in the 4<sup>th</sup> century. Artesunate and Artemether are the derivatives. Artemisinin combination therapies (ACTs) are recommended by WHO as the first and second line treatment for uncomplicated plasmodium falciparum malaria. Coartem is a combination of drug of two ingredients. One is Artemether, is very potent, but fast clearing drug, it stays for three days in the body. Another one is Lumefantrine, a broad-spectrum antibiotics are little longer, it stays for seven days in the body. Artemisinin can be administered by oral, intramuscular and as a suppository. It shows the rapid action and significantly reduces the parasites in first few days of treatment. In this study we discuss about extraction, mechanism of action, its side effects and formulation.



**PHY-PP-353**

### **Development of Organs for Transplantation by Using Stem Cells: A Dream to Reality**

**Partikshit Thakur, Ankit Kumar Yadav**

School of Physiotherapy and Paramedical Sciences, Lovely Professional University,  
Phagwara, Punjab, India - 144411  
patial86229@gmail.com

In the present era of advancement in technology and development when almost everything can be operated by the click of a button, now it is the time to advance the process of organ transplantation and to shift the focus from the traditional concept of “donor to receiver” to organ generation by using stem cells. Stem cells are the undifferentiated cells of the body, normally found in the bone marrow of the mammals and from which they transfer for the generation of cells for the brain, bone, blood vessels, blood cells and almost every organ and cells of the body. This differentiation capability of the stem cells (totipotency) makes them the ultimate key for the *in vitro* generation of organs like kidney, liver, heart, eye, and limbs of the body for further transplantation into the body of recipients. The traditional method of organ transplantation involves the harvesting of the organ from a donor and then transplantation into the body of the recipient. This entire process is risky for both the donor and recipient and suffer from the major limitation of graft rejection, use of immunosuppressant drugs and reduced life expectancy of the recipient. Moreover, the donor is also at risk of severe infection. To overcome these life-threatening issues, an inventive approach for the generation of the new organs from the stem cells of the recipients is described which is possible by the application of 3D- printing. Stem cells can be used for the preparation of bio-ink and later this bio-ink can be utilized for the creation of required organ in the lab conditions. This organ will not trigger an immune response of the recipient against itself and hence no graft rejection. This technique can be a lifesaving tool in case of organ transplantation and will reduce the economic burden with a green solution to the existing problem.



**PHY-PP-354**

### **Design and Development of Novel Dry Powder Inhaler Device**

**Sathya Priya L.S, Hari Haran A.G, Mohamed Halith. S, and Nagarajan. M**

Department of Pharmaceutics, K.M. College of Pharmacy, Madurai, Tamil Nadu, India - 625107

sathyap127@gmail.com

Dry powder inhalers (DPIs) are devices through which an active drug is delivered as a dry powder formulation for local or systemic effect via the pulmonary route. An ideal DPI should be a device, which is simple to use, cost-effective, convenient to carry, have sufficient moisture protection, accurate and uniform dose delivery, deliver optimal drug particle size, and high fine particle fraction (FPF) and low flow rate dependency. There are over 20 different DPI devices, single or multiple dose devices, breath activated and power driven, available in the market. However, these devices have significant limitations. This study was focused on designing, developing and validating a novel in-house DPI. The result shows that *in vitro* performance was better to that of the reference product. The *in vitro* deposition studies indicated that the device geometry has a significant effect on aerosol dispersion performance. Our DPI prototype has improved aerosolization performance without significant increases in device resistance.



**PHY-PP-355**

**Antifertility Activity of *Butea Monosperma* Lam and Its Phytoconstituents**

**Prakhar Bhadauriya\*, Priya Kumari, Takdeer Singh, Tashi Tenzin, Manish Vyas, Amrinder Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, 144411, Punjab, India.

prakhar.singh.aldrich@gmail.com

Population is increasing exponentially which has become a problem for the economic growth and human development for the world specifically for developing countries. However, contraceptive methods are available including pills, intrauterine devices (IUDs), condoms are the temporary whereas tubectomy and vasectomy are the permanent methods. Repeated administration or use of temporary contraceptive methods can cause various side effects including infertility. Therefore, herbal drugs are being screened for the antifertility effect due to their safety and efficacy in comparison to the conventional methods. One of these drugs is *Butea monosperma* Lam. That belongs to the family Fabaceae. It contains a variety of phytochemicals including alkaloids, flavonoids, tannins, cyanogenic glycosides, phenolic compounds, saponins and lignins which may be responsible for the activity. Various *in-vitro* and *in-vivo* studies have been reported for its antifertility, antidiabetic, anticancer, antimicrobial, antiviral, antioxidant, anticonvulsant, anti-inflammatory, nephroprotective, and hepatoprotective properties. This review will discuss the different studies showing the antifertility activity of *Butea monosperma* Lam.

***PHY-PP-356*****Alzheimer's Disease: Prevention, Early Diagnosis and Herbal Therapy for Treatment****Parvarish Sharma, Ruchi Sharma, Bikram Singh, Maninder Singh**School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
-144401

parvarish@gmail.com

Alzheimer disease (AD) is a progressive, dementing neurodegenerative disease in elderly, which affects innumerable people each year. AD is characterized by the loss of neurons and synapses in the cerebral cortex and certain subcortical regions, this loss results in gross atrophy of the affected regions, including degeneration in the temporal lobe, parietal lobe and other parts of the brain. Resultantly, the patient struggles to remember names, details related to events, stays in the state of confusion, disorientation and undergoes quick mood and behavioral changes. With the increased time, the patient needs to be kept under all-time assistance due to inability to take care of even the daily life activities. Therefore, this disease has a powerful emotional impact on caregivers and families of the patient. The Pathological hallmarks of AD include extracellular deposition of  $\beta$ -amyloid plaques, intra-neuronal neurofibrillary tangles (NFTs) and loss of cortical cholinergic neurones. The signs and symptoms of AD appear too late in old age. Therefore, either preventing the disease on the first hand or early diagnosis can only be helpful tools to defeat it. The prevention includes: appropriate diet with higher intake of turmeric, saffron, green vegetables and berries in meal. Minimizing the cholesterol level by avoiding fat intake and heavy metals. In case, if an early diagnosis is to be ensured then, certain techniques such as dermatoglyphic patterns study, Immunoprecipitation-mass spectrometry, MicroRNA estimation and Organ-on-chip devices can be of significant utilization. These techniques are cost effective and can effectively diagnose the AD even 20-30 years before the signs and symptoms appears. Furthermore, in case of treatment of this disease, herbal therapy has been reported to be an effective and safer tool for treating the disease for over prolonged time. As there are certain chinese medicines, aromatherapy and herbs which are been used persistently over ages for the treatment of the disease.



**PHY-PP-357**

### **Traditional Herbal Medicines for Neuropathic Pain in Diseases**

**Sahil Chechi, Sudhakar CK**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

sahilchaudhary2496@gmail.com

Hippocrates and physicians essentially used herbs for an assortment of ailment. Today's prominence on holistic medicine is an endeavor to correct the tendency in contemporary medicine to equate "health care" with the healing of disease entities. Traditional Chinese medicine (TCM) and Indian herbal medicine (Ayurveda) takes a holistic approach to permissive normal function and disease processes and focus on the cure and prevention. Neuropathic pain is a 'disease or disorder' concerning the nerve itself as the cause of the pain. Neuropathic pains are expression of a hundred different diseases that have harmful effects on normal neural performance. Herbal medicines are well known for their treatment of neuropathic pain in diabetic disease. Devil's Claw, Kava Kava, St. John's Wort, Valerian root, *Corydalis Yanhusuo* were some herbal medicine used in neuropathic pain. Dehydrocorybulbine (DHCB) from the roots of the *Corydalis yanhusuo* plant showed antinociceptive effect in pain. Kavalactones from Kava Kava change brain activity without sedation (dull thought processes). Devil's Claw extracts exhibit analgesic effects on nerve injury. Valerian root stimulates the release of GABA in the brain. Traditional herbal medicines loom to explore the preventative medicine for neuropathic pains in different diseases.



**PHY-PP-358**

### **Herbosomes As Novel Drug Delivery Systems: A Review**

**Abhijit Nijjar, Inderpreet Singh, Iqbaljit Kaur**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

iqbal.21959@lpu.co.in

Herbosomes are one amongst the novels developing technique in herbal medicines. The term “herbo” means the plant whereas “some” means that cellular-like. It contains phospholipids that act as natural digestive aids as well as transport the water-soluble and lipid-soluble nutrient and making the complex between phytoconstituent and phospholipids. It is a patentable technique. It is another technique to boost the bioavailability of the poor lipid-soluble medicine. Herbo-pharmaceutical that contains herbo constituents of plant extract surrounds and bound by lipid. The nature of herbal medicines bioactive ingredients is water soluble such as flavonoids. Herbosomes shows higher absorption, hence produces higher bioavailability than the conventional herbal extracts due to more solubility in water and the outer coating is of lipid. Because of their improved pharmacological and pharmacokinetic properties, herbosomes are used to treat acute and chronic liver diseases and therapeutically used as dietary supplements. The main objective of this current article highlights the knowledge concerning herbosomes merits, applications, features, challenges and its preparations.

**PHY-PP-360****Kola Nut: An Effective CNS Stimulant and Therapeutic Agent**

**Saumya Darshna Shikha, Jayprakash Gupta, Geetanjali Mehra, Rupinder Kaur, Ankit Kumar Yadav, Sachin Kumar Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411.

saumyashikha1998@gmail.com

Kola nut (*Cola nitida*) belongs to the cocoa family *stercullaceae* is mainly found in the topical region of Africa and extends up to American tropics. *Kola nut* is reported to be used for the treatment of depression, cancer, arthritis and as energy booster. CNS stimulant activity of kola nut is similar to the action of caffeine. It has also been used in folk medicine as aphrodisiac, appetite suppressant and also as main ingredient of soft drinks. During the second world war it was used by African soldiers who chew it to travel long distances without food. Kola nuts contains 1-2% of the theobromine, theophylline, phenolic, sugar and 2-3% of caffeine as active chemical constituents which are responsible for its stimulant activity. As per the study reports it has been found that the chemical compounds present in *kola nut* are active in the destruction and inhibition of the growth of tumour cells which may result in prostate cancer. Products which contains *kola nut* may be beneficial in a person with metabolic disorder like low testosterone, Grave's disease and Cushing syndrome. It is also used for the treatment of respiratory conditions like asthma, migraine pain, promote the production of gastric acid, increases heart rate (increases circulation). Moreover, medical application of kola nut are endless and further research and development is required. In the present study, a systemic review of most possible medicinal application of *kola nut* with its contraindication has been summarized and reported.

**PHY-PP-361****Anticancer Potential of *Abrus Precatorius* L and Its Constituents****Takdeer Singh, Manish Vyas, Prakhar Bhadauriya, Priya Kumari, Tashi Tenzin**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India – 144411

takdeersingh001@gmil.com

Cancer is reported as the second leading cause of death worldwide. Uncontrolled cell division in any part of the body is termed as cancer. Currently, great advancements have been reported for the treatment and control of cancer progression like chemotherapy, radiotherapy, adjuvant therapy, and hormonal therapy, etc. Significant deficiencies and improvements in these treatments remain to be explored including various undesired side effects for example osteoporosis, lymphedema, menopausal symptoms, hypertension, infertility, axillary web syndrome etc. Therefore, natural products are being explored for safe and effective chemotherapeutic agents. USFDA have also approved some plant derived cytotoxic agents like taxol, vinblastine, vincristine, the camptothecin derivatives, topotecan & irinotecan, and etoposide. Likewise, chemical constituents of *Abrus precatorius* L. specifically various derivatives of abrin are responsible for the anticancer activity of *Abrus precatorius* L. It is found effective against the oral and breast cancer. Present review will describe various *in-vitro* and *in-vivo studies* based on the anticancer property of *Abrus precatorius* L. and its constituents.



**PHY-PP-362**

### **Preparation and Stabilization of Curcumin Nanosuspension: An Overview**

**Ravi kumar, Bijay Kumar Yadev, Nitin Bhatt, Ankit Kumar Yadav, Sachin Kumar Singh, Bhupendra Singh Tomar**

School of Pharmaceutical Sciences, Lovely professional University, Phagwara, Punjab, India -144411

raviskumar111.rk@gmail.com

Turmeric is one of the most commonly used as cooking food material from the ancient time and has been also used in treatment and prevention of various types of diseases. It is a naturally occurring compound obtained from fresh and dried rhizomes of *curcuma longa* belonging to family Zingiberaceae. The chemical constituents present in turmeric are curcumin, dimethoxy curcumin, bisdemethoxycurcumin and also contain about 5% of volatile oils. Curcumin is the major chemical constituent present in turmeric used in treatment of various types of diseases like anticancer, antiviral, anti-inflammatory, antifungal and antioxidant, but less bioavailability and poorly soluble in water. Hence for the better solubility and bioavailability of curcumin, nanosuspension formulation was prepared by using bottom up technique. The extraction of curcumin powder was carried out by using water, solvent or both. Final formulation of nanosuspension was characterized by using Dynamic light scattering, scanning electron microscopy and stability study was observed by measuring zeta potential value up to four weeks from the day of the production with proper interval. The result showed curcumin nanosuspension of 323-733nm size, Zeta potential ( $-33.3 \pm 2.43\text{mv}$ ) and found good stability up to 4 weeks from the day of the production.

**PHY-PP-363****Role of *Desmodium gangeticum* in the Treatment of Rheumatoid Arthritis: An Overview**

**Diksha Mankotia\*, Mayukh Banerjee, Himaja M., Rahul Prasher, Bijay Kumar Yadav, Shubham Sinha, Ayinkamiye Clarisse, Ankit Kumar Yadav, Sachin Kumar Singh and Bhupendra Singh Tomar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India -144411

mankotiadiksha@gmail.com

Rheumatoid Arthritis (RA) is an auto-immune disorder that cause severe chronic inflammation of the synovial joints. It affects multiple tissues and organs. This disease is distinguished by a proliferative synovitis which leads to cartilage destruction and synovial hypertrophy which ultimately results in joint disproportion and increase functional disability. The various treatments that are available for treatment of RA includes Non-Steroidal Anti-Inflammatory Drugs, Disease-Modifying Anti-Rheumatic Drugs and corticosteroids. They reduce the inflammation as well as reduces the progression of RA. However, these all categories of drugs suffer from one and another limitations which includes gastric ulcers, diarrhea, renal ulcers, abdominal pain, digestive organ dysfunction and liver dysfunction which leads to the discontinuation of therapy. However, these problems may be overcome by the use of compounds from herbal origin. *Shalparni*, scientifically known as *Desmodium gangeticum* belongs to Leguminaceae family, contains N- dimethyltryptamine, hypaphorine, hordenine, caudicine, gangetin-3H which possesses potent anti-arthritis activity. The juice extracted from whole plant shows anti-rheumatic and anti-osteo arthritic activity via anti-inflammatory activity. Anti-inflammatory and analgesic properties of this herb helps to reduce the pain and swelling in joints. It also helps to provide relief in stiffness of joints and improves the mobility. The anti-inflammatory and anti-oxidative effect of flavonoid and alkaloid fractions of *Desmodium gangeticum* are reported that the presence of caffeic acid and chlorogenic acid in the flavonoid fraction. In the present study a systematic review of the potent anti-arthritis activity of *Shalparni* and advantages over the traditional synthetic treatment for the maintenance of the RA is compiled and reported.

**PHY-PP-364****Identification of Molecular Targets of Potential Anti-Diabetic Drugs by Using Pass and Molecular Docking****Abhay Tharmatt, Ranit Das, Abhinav Anand, Neha Sharma, Gopal Lal Khatik, Navneet Khurana**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

dasranit2010@gmail.com

Diabetes mellitus is not a solitary sickness yet is a gathering of metabolic issue influencing countless on the planet. It is primarily described by incessant hyperglycemia because of deformities in insulin discharge or insulin activity. It is predicted that the quantity of diabetes individual on the planet could reach up to 366 million by the year 2030. Despite the fact that the instances of diabetes are expanding step by step, aside from insulin and oral hypoglycemic medications, no other method of treatment has been efficiently grown up until now. In the present study, an initiative is tried to delineate the usefulness of PASS online software and molecular docking technique for providing new molecular ways of predicting new anti-diabetic drug targets of potential phytoconstituents. In the study, essential phytoconstituents having reported *in vitro* and *in vivo* anti-diabetic activities have been reviewed. Among them, few phytoconstituents were selected for presenting to PASS online software. Pa and Pi value was predicted for these phytoconstituents on different anti-diabetic target sites. Based on PASS prediction, five phytoconstituents were selected for molecular docking study using Autodock Vina 4.0. Three target sites which were, DPP-4, GLP-1, and  $\alpha$  glucosidase, were selected for prediction of probable affinities of these five selected phytoconstituents. Amongst these five constituents, diosmin showed best binding affinity with DPP-4, GLP-1 and  $\alpha$  glucosidase that was -10.2 kcal/mol, -8.3 kcal/mol and -9.7kcal/mol, followed by Kaempferol. Results of the present study can be utilized for designing of further *in vitro* and *in vivo* anti-diabetic studies for these phytoconstituents. This study suggested the use of these softwares in predicting the probable anti-diabetic targets sites of potential anti-diabetic phytoconstituents.

**PHY-PP-365****A Review on *Aegle Marmelos*: A Plant with Potential Medicinal Activities****Heena Khatun, Amarpal Singh, Ajitpal Singh**

St. Soldier Institute of Pharmacy, Jalandhar, Punjab, India - 144402

heenakhatun979@gmail.com

Herbal drugs are traditionally used in various parts of the world to cure different diseases. *Aegle marmelos* is commonly known as Beal tree which belongs to Rutaceae family. It is widely grown in India. The leaves of *Aegle marmelos* contain gamma sitosterol, aegelin, lupeol, rutin, marmesinin, beta-sitosterol, flavone, glycoside, marmeline and phenyl ethyl cinnamides. Extensive experimental and clinical studies prove that *Aegle marmelos* possess antimicrobial, antifungal, antiinflammatory, antidiabetic, antipyretic, analgesic, cardio protective, hepatoprotective activities. The extensive literature survey revealed that *Aegle marmelos* has diverse pharmacological spectrum as it possess wide range of chemical entity, as a consequence of which it is considered as an important herb for mankind.

**PHY-PP-366****Pharmacological Evaluation of Hesperidin in Reserpine-Induced Rat Model of Parkinson's Disease**

**Amandeep Kaur, Rajan Kumar, Rakesh Kumar, Neha Sharma, Navneet Khurana**  
School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab,  
India-144411  
rajankumar2788@yahoo.com

Parkinson's disease (PD) is the common motor function related, chronic progressive neurodegenerative disease. It is an age related disorder, affects approximately 1-2% of the population over 60 year of age and 4-5% of those who are above 80 year of age. The oxidative stress is one of the major cause of the PD. The increased oxidative stress can be best dealt with the use of different flavonoids having great antioxidant potential. In the present study, hesperidin (HSD), a flavonoid present in the citrus peel, has been selected with the aim to evaluate its beneficial effects in reserpine-induced rat model of PD using different behaviour (catalepsy, locomotor activity, muscle coordination, rearing behaviour) and biochemical parameters (thiobarbituric acid reactive substances, reduced glutathione, catalase, superoxide anion generation). Animals were divided into six different groups according to the treatments given to them. One group was vehicle control, second was disease control, third was standard treatment group, fourth and fifth was test groups and sixth was hesperidin *per se* group. Hesperidin was used at two dose level that is 50 and 100 mg/kg. It was observed that reserpine significantly produces the symptoms of PD in the rats. Hesperidin was found to be effective in reducing the behavioural alteration in the rats induced by reserpine. Treatment with hesperidin also found to reduce the oxidative stress or re-balance the redox system by improving the activity of the antioxidant enzymes. These results predict the potential of hesperidin as anti-parkinson agent but further research should be done to warrant its usefulness in this condition.

**PHY-PP-367****Extraction, Isolation and Standardization of Gingerol by TLC, HPLC from Ginger Rhizome and The Study of Anti-Inflammatory Activity for the treatment of Arthritis and Migraine****N Vishwanadh\*, Jamshed Haneef, Ankit Kumar Yadav, Sachin Kumar Singh, Surajpal and Bhupendra Singh Tomar**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India -144411

nalamvishwanathanand1995@gmail.com

Ginger is used as cooking recipe worldwide which is commonly called as “Adrak” in Hindi which is used as a Traditional Indian medicine over a 25 Centenary. Belongs to the family “Zingiberaceae” which is cultivated from Africa to Asia and Caribbean now-a-days. Rhizome of ginger is broadly used as herbal medicine which consists of active constituents like Gingerol (23-50%) and Shogaol (18-25%) and other constituents are Carbohydrates, Proteins and others like Lipids, Terpens and Phenol compounds. It is available in two varieties Fresh and Dried which results medicinal function differences of the herb. Fresh Ginger is consisting of Fibers, Proteins and Carbohydrates which mainly used as anti-inflammatory, cholesterol lowering herb. Rhizome of ginger is mainly used in inflammation, nausea, vomiting, arthritis and other common migraine headaches to relief the back pain, neck pain also improves the appetite and counter irritant whereas Ginger root is to treat dyspepsia, prophylactic against motion sickness. Extraction of Gingerol which is the major constituent of the ginger and can be isolated and Standardized by TLC and HPLC methods.



**PHY-PP-368**

**Chemometrics: A Novel Approach for Herbal Drug Standardization**

**Nitin Kumar Bhatt\*, Ravi Kumar, Bijay Kumar Yadav, Yogita Kumari, Gurman Kaur, Rinku Rozera, Ankit Kumar Yadav, Bhupendra Singh Tomar, Sachin Kumar Singh, Udai Chand Agrahari**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara - 144411, Punjab India

nitinbhatt3331@gmail.com

Standardization of botanical drugs are mainly performed by employing chromatographic and spectroscopic techniques to analyse its chemical profiles. But, due to complexity of chemical profile of phytomedicines, it is difficult to analyse its chemical profile with chromatographic and spectroscopic techniques. Various advanced analytical techniques are introduced to assess the purity and quality of phytomedicines and significantly large amount of measurement data has been developed. Chemometrics is the application of mathematical and statistical approaches to retrieve more convenient chemical information from the original data. Thus, the employment of chemometrics in the domain of medicinal plants is spontaneous and essential. Comprehensive approaches and hyphenated techniques coupled with chemometrics are used for extracting advantageous information and delivering various methods of data processing are now extensively used in herbal drugs, among which chemometrics resolution methods (CRM) and principal component analysis (PCA) are the most commonly used techniques. This article emphasizes mainly on the recent several vital analytical techniques, important chemometrics tools and explanation of results by PCA, and applications of chemometrics in quality assessment of botanical drugs for the identity, efficacy and uniformity.

**PHY-PP-369****Proniosomes: Advancement and Challenges****Rakshit Kestwal<sup>\*</sup>, and Vijay Mishra**School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411

rakshitkestwal2000@gmail.com

Nanotechnology is expected to be revolutionary advanced technology in today's world in the field of life sciences including targeted drug delivery, diagnostic purpose, nutraceuticals and implants in biomedical sciences. Advancement in nanotechnology improves the scope of preparation of new formulations, one of which is for the preparation of proniosome. Proniosomes are the surfactant coated water-soluble carrier particles which on rehydration forms niosomal dispersion in a minute just before its use, by agitating in a hot aqueous media. During storage and transportation proniosome shows great physical stability. The vesicular structure of proniosome encapsulates the drug and prolongs its presence in the systemic circulation and increase the tissue targeting by enhancing penetration and reducing toxicity. The physical instability issues like aggregation, leaking, fusion, faced by niosome are minimized by proniosome and provides great convenience during transportation, distribution, storage and dosing. From a technical vision, niosome are the drug carrier possessing an outstanding chemical stability and overcomes many disadvantages faced with liposomes, like higher cost and variability in level of purity of phospholipids. The objective of this review is to focus on different prospects associated with proniosome and their preparation, classification, entrapment efficiency, in-vitro drug release, application and advantages.

**PHY-OP-370****Depression in Youth: An Update to Understanding****Aaditee Sharma, Abhishek Goutam**

School of Pharmaceutical Sciences, Shoolini University, Solan, HP, India -173212

aaditee83@gmail.com

Depression, or major depressive disorder, is a mental health condition marked by an overwhelming feeling of sadness, isolation and despair that affects how a person thinks, feels and functions. The condition may significantly interfere with a person's daily life and may prompt thoughts of suicide. In 2015, an estimated 16.1 million U.S. adults (aged 18 or older), or 6.7 percent of the adult population, had at least one major depressive episode, or experienced depressive symptoms. The very common signs of depression in adolescents even though they may or may not show all signs: Apathy, complaints of pains, including headaches, stomach aches, low back pain, or fatigue, difficulty concentrating, difficulty making decisions, Excessive or inappropriate guilt, irresponsible behaviour: for example, forgetting obligations, being late for classes, skipping school, loss of interest in food or compulsive overeating that results in rapid weight loss or gain, memory loss, preoccupation with death and dying, rebellious behaviour, sadness, anxiety, or a feeling of hopelessness, staying awake at night and sleeping during the day, Sudden drop in grades, use of alcohol or drugs and promiscuous sexual activity, Withdrawal from friends. The causes of depression are not fully understood, but scientists think that an imbalance in the brain's signaling chemicals. The most common methods are antidepressant medication and psychological counseling. A prolonged or chronic depression can have a devastating impact on your emotional and physical health.

**PHY-PP-374****Scope of Anti-Aging Therapies****Rishabh Sharma**

School of Pharmaceutical Sciences, Shoolini University, Solan, HP, India -173212  
rsharma.7k@outlook.com

Looking at our evolutionary history, survival has been the main purpose of life. Organisms evolved from a single cell to multicellular forms and adapted different methods to reproduce, just to survive and pass on what they have acquired; despite this many people think of death as the inevitable end of life. As a living being trying to prolong our life span should be innate to us. In the near future instead of death being an inevitable end, it will be more like an option. This review focuses on the different natural and clinical therapies or methods to reduce and stop aging process, and also the latest research in the field of anti-aging therapies. There are many factors that contribute to our senescence, many of which lies within our lifestyle and others in our biology. Avoiding consumptions and intake of certain toxins in our diet like trans-fats, LDL, heavy metals, carbon monoxide, pesticides, polluted air, smoke and other inflammation mediators can be a good way to start a healthy lifestyle. A step forward is the calculated Lifestyle in which you monitor everything that you eat and that goes into your body. All this might just be sufficient to slow down ageing, but to truly stop or reverse the aging process on the body level we need to stop aging at the cellular level. This can be achieved by naturally inducing survival response like anti-inflammatory pathways or by using new scientific research like stem-cell therapies, genetic engineering, Increasing telomere length, senescent cell removal and other modern techniques.

**PHY-OP-376****Neurological Impacts of Alcoholics****Arlner Mathai\***

School of Pharmaceutical Sciences, Shoolini University, Solan, HP, India -173212

arlnermatt@gmail.com

Neurological complication of uncertain etiology are alcoholic cerebellar degeneration, central pontine myelinolysis, marchiafava-bignami disease, Alcoholic amblyopia. Alcohol facilitates inhibitory neurotransmitter GABA and inhibits excitation induced by NMDA. It has effect on opioid, dopamine and serotonin system. Sustained heavy consumption causes dependency and increased tolerance with reduced sensitivity to GABA and increased sensitivity to NMDA. Alcohol has some interactions with the release and functioning of neurotransmitters includes Dopamine (alcohol increases dopamine use in the nucleus accumbens mediating its pleasurable effects via the common reward pathway of the mesolimbic system); Noradrenaline (alcohol release of noradrenaline contributes to the enlivening and activating "party" effects of alcohol); endogenous opioids (alcohols analgesic, pleasure and stress reducing functions are opioid related); GABA (alcohol can potentiate GABA activity through certain subunits of the GABA A receptor. This accounts for alcohols anxiolytic and ataxic actions, and partially for amnesia and sedation); Glutamate (alcohol acts to block the excitatory NMDA receptor, opposing glutamate causing amnesia and other cerebral depressany effects); Serotonin (alcohols stimulation of 5HT3 (5- hydroxytryptamine 3) provides the nausea associated with alcohol use). Serotonin may also be linked to the pleasurable effects of alcohol and differing brand. Serotonin levels may distinguish between anxious and aggressive alcohol users. At cellular level daily alcohol intake induces fractional increase in NMDA receptor levels – excitatory. When alcohol is stopped these excess receptors causes large calcium flux into cells, hyperexcitability and cell death. Alcohol mediated inhibitory action of GABA reduces. Increase in excitatory glutamate and drop inhibitory GABA gives noradrenergic "overdrive" sympathetic over activity.

**PHY-OP-377****Production of Sophisticated Asset and Its Effect Upon the Plant Growth Under Viral Transmission into The Host Cell****Gaurav Sharma, and Saurabh Kulshrestha**

Faculty of Applied Sciences and Biotechnology, Shoolini University, Solan, HP, India - 173212

rohitgoyal1505@gmail.com

Agricultural acquisition devastation most probably has been caused by viruses since its initiation which had affected all over crops rate and turns the cumulative yield conditions of crops to the overwhelmed disaster which affects the agricultural sector, especially farmer's economical lifestyle. Most of the viruses haven't any treatment to halt them as an ex.; Mosaic virus which affects several crops and like turnip mosaic virus affects *Brassica rapa*, Yellow mottled virus mainly affects *Camellia sp.*, its effect can be halted for a spell but not for forever. It has been well established that ribonucleic protein of retroviruses is very functional for the rearrangement of the viral lipid layer coat; in Mosaic viruses; which can work as the suppression factor for viral identity and PPU of plant cell allows them to transmit through one to another cell by invading the tissues which amid it. To make the components of the cell as a prophylactic asset, it requires a complex factor to prevent the formidable effect of viruses. The complex factor can be synthesized by compiling essential components which affect viral entity. Such sophisticated acquisition can only work in the "key-chain model" of reagents, enzymes, and factors as well. These accommodations can lead viral affection to the low rate and after that to be totally degraded. Degradation particles can affect the cell again if they have any reacting or nutritional medium.



**PHY-PP-378**

### **Nanotechnology: A New Approach in Herbal Medicine**

**Jyoti, Rakesh Kumar Marwaha**

Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India-124001

jyotidahiya072@gmail.com

Herbal derivatives are of great research interest owing to their wide applications in therapeutics. Employing these herbal compounds for synthesizing nanoparticles for biomedical applications have been ventured in recent times due to their fewer side effects. The integration of the Nano science as a Novel drug delivery system (NDDS) in traditional system of medicine enriches the potential of herbal drugs for treating chronic diseases such as cancer and ravaging diseases. The use of nanotechnology for “phytotherapy” or treatment of various diseases by herbal medicines/drugs, including herbal drug delivery where current and emerging nanotechnologies could enable entirely novel classes of therapeutics. Various NDDS such as liposomes, ethosomes, nanoparticle, pronisomes, floating drug delivery system, microemulsions have been reported for delivery of herbal drugs. The combination of herbal medicines with nanotechnology might be able to potentiate the action of plant extracts, improve the bioavailability, reduce the required dose and side effects. Overall, this review provides that nanotechnology has great potential for delivering herbal drugs for various class of diseases and its future impact on smart herbal drugs. NDDS is designed to overcome the drawbacks of the traditional herbal drug system due to its wide applications to mankind. Nano-sized drug delivery systems of herbal drugs have a potential future for enhancing the activity and overcoming problems associated with pure herbal drugs.

**PHY-PP-380****Epilepsy: A Neurological Threat: Who Initiative****Neha Nupur**

School of Pharmaceutical Sciences, Shoolini University, Solan, HP, India - 173212

nehanupur.rajni@gmail.com

Epilepsy-A neurological disorder marked by sudden recurrent episode of sensory disturbance, loss of consciousness, or convulsions, associated with abnormal electrical activity in the brain pathophysiology. A seizure is the clinical manifestations of epilepsy. This occurs basically due to excessive firing of the neurones and fast spread of these impulses over the brain. There are two main types of seizures. Generalized seizures affect the whole brain. Focal, or partial seizures, affect just one part of the brain. Epilepsy is a fairly common neurological disorder that affects 65 million people around the world. In the United States, it affects about 3 million people. Nearly 80% of the people with epilepsy live in low- and middle-income countries. A few of the most commonly reported triggers are lack of sleep, illness or fever, stress, bright lights, flashing lights, or patterns, caffeine, alcohol, medicines, or drugs, skipping meals, overeating, or specific food ingredients. WHO and its partners recognize that epilepsy is a major public health concern. As part of an initiative established in 1997, WHO, the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE) are carrying out a global campaign – “Out of the Shadows” – to provide better information and raise awareness about epilepsy and strengthen public and private efforts to improve care and reduce the disorder's impact.

**PHY-OP-382****Potential Biological Efficacy of Pinus Plant Species Against Oxidative, Inflammatory and Microbial Disorders****Aditi Sharma<sup>1</sup>, Prakrati Garg<sup>3</sup>, Aaliya Ali<sup>3</sup>, Rohit Goyal<sup>1</sup>, Lalit Sharma<sup>2</sup>**<sup>1</sup>School of Pharmaceutical Sciences, Shoolini University, Solan, HP, India - 173212<sup>2</sup>Jaypee University of Information Technology, Wanknaghat, Solan, HP, India - 173212<sup>3</sup>School of Biotechnology, Shoolini University, Solan, HP, India - 173212

prakrati417@gmail.com

The study was aimed to investigate biological potential of phytoconstituents of Pinus plant species: *Pinus roxburghii*, *Pinus wallichiana* and *Pinus gerardiana* using *in-vitro* antioxidant, anti-inflammatory and antimicrobial methods. Method: The hydro-alcoholic extraction of dried plant: stem bark was done and the antioxidant activity was evaluated using free radical scavenging methods for 1,1-diphenyl-2-picrylhydrazyl, (DPPH), nitric oxide and hydrogen peroxide radicals, reducing power assays, and total antioxidant capacity. Anti-inflammatory activity was carried out using albumin denaturation and HRBC membrane stabilization assays. Antimicrobial and antifungal activities were also conducted using agar well diffusion method. Results: The qualitative phytochemical analysis of hydro-alcoholic stem bark extracts of three plant species revealed the presence of various biochemical compounds such as alkaloids, flavonoids, glycosides, triterpenoids and saponins. Quantitative phytochemical analysis of plant extracts showed the presence of phenolics, flavonoids, tannins, beta-carotene and lycopene. Plant extracts of three pinus species showed significant antioxidant activity against DPPH, nitric oxide and H<sub>2</sub>O<sub>2</sub> radicals. In *in-vitro* anti-inflammatory investigation, *Pinus roxburghii* exhibited highest protection against albumin denaturation 86.54±1.85 whereas *Pinus gerardiana* showed 82.03 ± 2.67. Moreover, plant extracts were found to prevent the growth of microorganisms *Pseudomonas aeruginosa*, *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans* showing promising antibacterial and antifungal activities against *Candida albicans*. Conclusion: The findings of the present study derived the rationale for the therapeutic usage of Pinus which is a highly timber yielding plant from Himalayan region, against oxidative, inflammatory and microbial diseases.

**PHY-OP-383****Phytosomal Technique: Revealing Journey of Phytopharmaceuticals****Sudhir Kumar,<sup>1</sup> Ashish Baldi,<sup>2</sup> Dinesh Kumar Sharma<sup>3</sup>**<sup>1</sup>ISF College of Pharmacy, Moga, Punjab; Uttarakhand Technical University, Dehradun, Uttarakhand, India;<sup>2</sup>Department of Pharmaceutical Sciences & Technology, Maharaja Ranjit Singh, Punjab Technical University, Bathinda, Punjab, India,<sup>3</sup>Devsthali Vidyapeeth College of Pharmacy, Rudrapur, Uttarakhand, India.

sudhirkumarthukral@rediffmail.com

Phytopharmaceuticals are healing the world since billions of years even though their clinical validation is questioned by virtue of their impediments like low lipid solubility, poor stability, large size moiety and needless metabolism in the gut. To overcome this novel Phytosome technology has emerged as committed and promising drug delivery system with improved efficacy, quality and target ability of active plant constituents. Novel herbal formulation techniques have assured the researchers to deliver the plant-based secondary metabolites to their systemic targets. Cellular vesicles produced by phytosome technique prevent the destruction of water-soluble phytoconstituents such as terpenoids, glycosides, flavonoids, and phenolics by gastric secretion and microflora of gut. The present study highlights the unique properties of phytospholipid complex along with their application in the novel herbal drug delivery system. Various methods employed in phytosomal preparation and characterizations along with the phytosomal advantages over conventional herbal extracts are revealing the prospectus of phytopharmaceuticals and exploring new directions and endless frontier as novel phyto drug regimen.

**PHY-PP-384****Cuo Nanoparticle Mediated Elicitation of Phytochemicals in Chicory (*Cichorium Intybus* L.)****Naveen Chandra Pant<sup>1</sup>, Aditya Swarup<sup>2</sup>, Ankit Johari<sup>2</sup>, Lenin Laishram<sup>2</sup>, Rakesh Dhoundiyal<sup>3</sup>**<sup>1</sup>Akal College of Agriculture, Eternal University, Baru Sahib, Sirmaur, HP, India - 173101<sup>2</sup>Department of Pathology, Dolphin (P.G.) Institute of Biomedical and Natural Sciences, Dehra Dun, Uttarakhand, India - 248007<sup>3</sup>Department of Chemistry, Shri Guru Ram Rai P.G. College, Dehradun, Uttarakhand, India - 248007

naveen\_cpant@rediffmail.com

Plants are an important source of pharmacologically compounds with myriad therapeutic effects. Bioactive isolated may serve as starting material for commercial synthesis of drugs as well as a model for the production of biologically active compound. Elicitation of secondary metabolites is of great significance to enhance the production of secondary metabolites in plants at an industrial scale. Elicitors activate signal-transduction cascades, which mediates the expression of genes related to the biosynthesis of secondary metabolites. Elicitation mechanism is complex because of thousands of intertwined metabolic events. Additionally, it is affected by the type, specificity and concentration of elicitors, growth stage, nutritional status of plants and physiochemical environment of the interaction etc. Nanoparticles are currently emerging as new class of elicitors. Recent studies on the induction of secondary metabolites in response to nanoparticles have provided insights in using these submicron size particles for enhanced production of secondary metabolites in plants. Subsequent phytochemical processing is essentially required to optimize the concentration of known constituents and also to maintain their biological activities. Extraction is an important step in the itinerary of phytochemical processing for the discovery of bioactive constituents from plant material. In the present investigation 1.16-fold increase in total phenol content, 1.50-fold increase in flavonoid content and 1.97-fold increase in tannin content in roots was observed w.r.t control plants 20 days after treatment of chicory (*Cichorium intybus* L.) with 1 ppm CuO nano particles. Corresponding increase (1.28 folds) in antioxidant activity was also observed which clearly proves the increased phytochemicals responsible for higher antioxidant activity in roots of *Cichorium*. Thus, nanoparticles may be used effectively for increasing production of different therapeutic agents in different medicinal plants.



**PHY-PP-385**

### **Plant Constituents Used in Treatment of Neuropathic Pain**

**Raji, Sakshi Panchal, Indu Melkani, Bimlesh Kumar\*, Sachin Kumar Singh, Monica Gulati, Narendra Kumar Pandey, and Saurabh Singh**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India – 144411

bimlesh1pharm@gmail.com

Neuropathic pain which is caused due to an injury or disease of somatosensory nervous system is major chronic pain disorder and it is mainly categorized as peripheral or central pain. Worldwide millions of people are suffering from this chronic condition. Due to side effects of approved and licensed drugs used for treatment of neuropathic pain certain plants have been used all over the world for control and treatment of neuropathic pain with no side effects. The commonly used plants for the treatment of different types of neuropathic pain are *Artemisia dracuncululus*, *Mitragyna speciosa*, *Pterodon pubescens Benth*, *Phyllanthus amarus*, *Acorus calamus*, *Citrullus colocynthis*, *Ocimum sanctum*, *Salvia officinalis*, *Rubia cordifolia*, *Ginkgo biloba*, *Curcuma longa*, *Momordica charantia*, *Butea monosperma*, *Elaeagnus angustifolia*, *Nigella sativa*, *Crocus sativus* etc. The major mechanisms considered in pain relief by these herbal remedies are anti-inflammatory, antiapoptotic, calcium inhibitory actions, neuroprotective and anti-oxidant activity.



**PHY-PP-386**

### **Effects of Cross Linking Agent on Boswellic Acids Loaded Chitosan Nanoparticles**

**Neeta, Harish Dureja**

Faculty of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, India  
neetasolanki86@gmail.com

Boswellic acids extracted from the gum resin of plant *Boswellia serrata* are well reported for anti-inflammatory and anticancer activities but associated with poor water solubility and bioavailability constraints. Chitosan, has gained more attention as a drug delivery carrier due to their better stability, low toxicity, simple and mild preparation method and providing versatile routes of administration. The aim of the present investigation was to study the influence of crosslinking agent on characteristics of chitosan nanoparticles. Boswellic acids loaded nanoparticles were prepared by ionic gelation using sodium tripolyphosphate as a cross-linking agent. Developed nanoparticles were characterized by different evaluation parameters such as particle size, drug entrapment efficiency, loading capacity, surface charge and surface morphology. *In vitro* drug release studies were carried out in two pH 1.2 and pH 6.8 and release data was fitted to different kinetic models. The developed nanoparticles exhibited spherical shape with z-average 67.5-187.2 nm, maximum entrapment efficiency  $80.06 \pm 0.48$  with positive zeta potential 44 mV. *In vitro* release data showed an initial burst release followed by slow sustained drug release up to 24 followed by non fickian diffusion mechanism. It is concluded that the concentration of cross-linking agent is critical parameter in the formulation of chitosan nanoparticles

**PHY-PP-387****Effects of Phyto additives on Carcass Characteristics and Blood Profile of Broiler****D. S. Gaikwad<sup>1</sup>, Y. G. Fulpagare<sup>2</sup>, D. K. Deokar,<sup>2</sup> Hina Upadhyay<sup>1</sup>**<sup>1</sup>School of Agriculture, Lovely Professional University, Phagwara, Punjab, India - 144411<sup>2</sup>Mahatma Phule Krishi Vidyapeeth, Rahuri M.S., India -413722

dsgaikwad7@gmail.com

The trial was conducted with 140, day old „Vencob-400“ chicks, which were divided into 7 treatment groups (Five chicks per replicate) i.e. 20 chicks per treatment groups. Dietary treatments consisted of basal diet with no additives T0 (Control), T1, T2, T3, T4, T5 and T6 receiving 1.0%, 2.0% and 3.0% cinnamon and 1.0%, 2.0% and 3.0% ginger, respectively. Among the carcass characteristics the highest weights were observed for breast and thigh but had no effect on neck, back, drumstick, wing and heart. The organoleptic tests indicated that 2% cinnamon (T2) and 1% ginger (T4) supplemented diet, meat was superior in colour and appearance, flavor, texture, juiciness and acceptability as compare to control diet. The blood parameters viz., cholesterol, (HDL, LDL) serum triglycerides, hemoglobin showed significant ( $P \leq 0.05$ ) differences at 2% cinnamon and 1% ginger as compared to control. The addition of 2% cinnamon or 1% ginger levels improve the meat quality especially colour and appearance, flavor, texture, juiciness and acceptability as compare to control diet.



**PHY-PP-388**

### **Natural Products: A Viable Source of Novel Drug Leads**

**Meenu, Pinki Phosgat, Neha Sharma, Pratibha Sharma**

Department of Pharmaceutical Education & Research, BPSMV, South Campus, Bhainswal Kalan, Sonapat, India - 131001  
minupoonia@gmail.com

Nature, the master of craftsman of molecules created almost an inexhaustible array of molecular entities from plant sources. Plants are more perfect natural laboratories for the synthesis of various molecules ranging from simple skeleton to highly complex chemical structures. The modern natural product research is undergoing a revolution due to recent advancement in combinatorial biosynthesis, microbial genomics and screening processes. Natural products have been the backbone of traditional system of healing throughout the globe and have also been an integral part of history and culture. The enormous structural diversity of natural products and their medicinal significance has led researchers to predict that screening natural resources will generate new lead compounds. Compounds derived from natural sources have been a basis for the development of clinically useful agents active against for various diseases such as anticancer, anti-infective agents *etc.* Some relevant examples of natural products such as quinine formed the basis for synthesis of commonly used antimalarial drugs, Vinca alkaloids such vinblastine and vincristine isolated from *Catharanthus roseus* used as anti- cancerous agents, Paclitaxel the most exciting plant derived anti-cancerous drug from the leaves of *Taxus* species, drug Ziconotide isolated from venom of snail used for analgesic activity, Teprotide isolated from venom of pit viper led to design and synthesis of ACE inhibitors used in cardiovascular disease *etc.* Natural products research will continue to remain popular because natural products have shown high commercial value due to their unique and great biodiversity, advantageous pharmaceutical properties such as reduced or no toxicity profile and potential for synergistic effects.

**PHY-PP-390****Exploring Potential of Herbal Drugs in Treatment of Heart Stroke****Anuja Verma, Reecha Madaan, Rajni Bala**Chitkara College of Pharmacy, Chitkara University, Rajpura Punjab, India  
anujaverma27@gmail.com

Despite the innovation of new era's medicines and excess of valuable knowledge there are many world's problematic diseases which still lacks the effective cure and treatment and one of them is heart stroke. Oxidative stress plays major role in its pathogenesis which is related to unbalance between free radical generation and endogenous anti-oxidant defences. As the need for novel and effective treatments increases, researchers have changed their mind towards traditional sources for the development of medications for stroke. In case of heart stroke, environmental factor such as diet plays important role and it is also a principle risk factor. Products based on animals, inhibits the cellular toxicity and plant based products also provides the neuroprotective treatments. Several phytonutrients, e.g. flavonoids such as quercetin and genistein, phenolic (resveratrol) and organsulfur (sulforaphane) compounds have been shown to be beneficial in preclinical models of stroke by modulating intracellular redox sensitive pathways. Herbals drugs are used as prophylactic in patients suffering with high risk of stroke. Traditional Chinese medicines like *Radix stephaniae*, *salviae miltiorrhizae*, *Ligusticum wallichii* Franchat (Chung Xiong), *Acanthopanax senticosus*, *Panax ginseng*, *Uncaria sinensis* etc. are used for stroke. Indian drugs like *Withania somnifera*, *Centella asiatica*, *Shilajit*, *Tinospora cordifolia* and *Convolvulus pluricaulis* are used as prophylactic treatment in the middle cerebral artery occlusion model of stroke in rats. Various ailments related to stroke have been treated with these herbal drugs in ancient period and recently they have been reported more beneficial.

***PHY-PP-391*****Case Study of an Autistic Boy with Dream of Living a Normal Life- Birth to 14 years Follow up****Manvi Sharma, Durga Prathap, M. Indumati Devi**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India - 144411

Autism can be defined as a range of conditions characterized by challenges with social skills as well as by unique strengths and differences. This case report depicts all the delayed development as well as development milestones for a 14 years old child with autism. It is been reported that many children with autism suffering from wide range of mental, physical and emotional disturbances which significantly effects their communication and social life. This case reports depicts a boy who had received intense participation of family members in supporting his therapy all the way possible which resulted into greater recovery. He was born without any complications during birth, however there was a poor tone noticed by mother while carrying him, also he had delayed gross and fine motor development skills along with abnormalities in his sensations. Anyhow, his oro-motor and speech have been improved well after 3 years followed by initiation of gait in the absence of crawling. As there is a greater improvement in his verbal skills he is intended to play with his peer age group children which is very rare in autism but he ends up being disappointed with children's behaviour towards him due to low level of physical and mental abilities. This case reports gives an idea that peer group involvement is one of the rare behaviour from autistic child which shows a sign of good prognosis but It is important for the parents to encourage their child to play safely with his peers.

**PHY-PP-392****Pharmacological Effects of Cannabidiol: An Important Phytoconstituent****Arvinsingh Sahadey, Neha Sharma**

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab, India  
- 144411  
arvinsaha2@live.com

Cannabidiol (CBD) is one of the important phytoconstituent obtained from the natural hemp. Isolation of CBD is done through extraction procedure using oil as a carrier (preferably coconut oil). Thus, it is also known as CBD Oil. As compared to Tetrahydrocannabinoid (THC), CBD possess no effect on psychomotor activities. It only potentiate the synthesis of endocannabinoids and do not binds directly to endocannabinoid receptors. Instead it binds to the dopamine, opioid and serotonin receptors. Thus, it dampens the drugs craving and withdrawal symptoms of various opioid drugs. Different concentration of the oil was used in various stages of treatment of numerous diseases. Various *in vivo* studies have shown that this phytocannabinoid is not only neuroprotective in nature but also has anti-inflammatory and analgesic effects. Moreover, CBD also inhibit the absorption of anandamide, leading to reduction of the amount of pain in severe conditions. There is no activation of brain reward system on behalf of CBD, which limit inflammation in brain and the nervous system. CBD oil is mainly uses to alleviate pain in arthritis, muscle sclerosis and chronic pain and in certain immuno system response.



**PHY-PP-394**

**ROLE OF ACTIVATED CHARCOAL AND ELICITORS ON ROOT INDUCTION OF MEDICINALLY IMPORTANT PLANT: *PLUMBAGO ZEYLANICA***

**Arpita Roy, Navneeta Bharadvaja**

Department of Biotechnology, Delhi Technological University, New Delhi-42, India  
arbt2014@gmail.com,

*Plumbago zeylanica* commonly known as 'Chitrak' is pharmaceutically important medicinal plant that contains various phytochemicals which includes like steroids, glycosides, saponins, flavonoids, alkaloids, triterpenoids, coumarins, tannins, phenolic compounds, fixed oils, carbohydrates, proteins, fats and naphthoquinones. Due to its wide range of medicinal activities this plant is over exploited. The aim of this study was to assess the effect activated charcoal concentration (1g/l, 2g/l, 3g/l and 4g/l) and elicitors (Yeast extract and Malt extract) on the root induction of *Plumbago zeylanica*. Activated charcoal is composed of carbon, arranged in a quasigraphitic form of small particle size. It prevents browning of cultured tissues and media by adsorption of toxic compounds like polyphenols released by cultured tissues. Elicitation is an efficient strategy to enhance the biosynthesis of secondary metabolites in plant cell cultures. All the four concentration of activated charcoal treatments showed positive results in terms of growth whereas maximum shoot ( $1.2 \pm 0.42$ ) and root ( $7.8 \pm 0.42$ ) multiplication observed at 2 g/l activated charcoal containing media. Among the two elicitors used for this investigation Malt extract (1 mg/l) showed the highest root number ( $9.6 \pm 0.52$ ) and yeast extract showed highest shoot ( $1.7 \pm 0.48$ ) formation. Further GC analysis revealed that culture treated with elicitor showed highest amount of plumbagin production as compared to the control culture.



**PHY-PP-395**

### **The Genus *Pyrus* - An Update**

**Kiran, Vandana garg,\* and Anju Dhiman**

Department of Pharmaceutical Sciences, M. D. University Rohtak, Rohtak, Haryana, India.  
kirankangra90@gmail.com

Genus *Pyrus* is classified into three main categories according to their origin and production. These are Japanese pear (*P. pyrifolia*), Chinese pear (*P. bretschneideri* and *Pyrus ussuriensis*) and European pear (*P. communis*). The review includes number of references on the genus *Pyrus*, and comprises ethnopharmacology, morphology, phytoconstituents and pharmacological reports. Most popular species of genus *Pyrus* are *P. pyrifolia* and *P. communis*. *Pyrus* species are categorized under medicinal plants. *P. communis* is native to Central and Eastern Europe and Southwest Asia while *P. pyrifolia* is native to East Asia. *Pyrus* is rich source of carbohydrates, amino acids, steroids, cardiac glycosides, coumarin glycosides, flavonoids, phenolic compounds, alkaloids and Tannins. Among various species, *P. communis* and *P. pyrifolia* possess medicinal value, and have been traditionally used as antioxidant and antimicrobial. In the concluding part, the future scope of *Pyrus* species has been accentuated with a view to establish their miscellaneous biological behavior and mode of actions.

**PHY-PP-396****Trends in Ageing and Skin Care: Nutricosmetics and Neurocosmetics****Shivam Goutam, Reecha Madaan, Rajni Bala**

Chitkara College of Pharmacy, Chitkara University, Rajpura, Punjab, India

shivam.sharma100@gmail.com

The market for cosmeceuticals continues with significant annual growth, but today consumers are more aware of nutritional products that contribute to both skin health and disease prevention. In the last 10 years, pharmacists, chemists, nutritionists, and physicians have been working together to develop new nutritional applications to satisfy people's needs and demands. Nutricosmetics, besides cosmeceuticals and nutraceuticals, have emerged as a new strategy to prevent disease and to sustain general health and fitness while supporting skin health and beauty. Characterized by oral supplementation of nutrients, nutricosmetics are also known as "beauty pills," "beauty from within," and even "oral cosmetics." The major claim is the antiaging effect, reducing wrinkles by fighting free radicals generated by solar radiation. Among the ingredients used in nutricosmetics, antioxidants represent the most crucial. The best-known antioxidants are carotenoids (beta-carotene, lycopene, lutein and zeaxanthin) and polyphenols (anthocyanidins, catechins, flavonoids, tannins, and procyanidins). Neurocosmetics, new category inaugurated in 2007 program of the New York Society of Cosmetics Chemist (NYSCC) and are based on and formulated by the NICE (Nervous, immune, cutaneous and endocrine system). They are innovative cosmeceuticals which shows a controlled penetration through the skin at the level of the different skin layers. They affect neurons present in the skin and shows mood alleviating as well as antiaging, antiwrinkle effects. Research is promoted to develop more like these properties having products which can improve both external appearance and internal mood alleviation through novel drug delivery system like nanoparticles, microemulsions, liposomes, dendrimers and sprays.

**PHY-PP-399****Basal cell carcinoma: Targeting sonic hedgehog pathway****Chetan Thakur**

School of Pharmaceutical Sciences, Shoolini University, Solan, HP, India-173212  
chetanthakur19june@gmail.com

Basal cell carcinoma (BCC) is a cutaneous skin cancer. It is mainly found in fair people and in those who has a long exposure to sunlight or other high energy radiations. Hedgehog pathway that helps in cell differentiation has been reported to dysfunction in basal cell carcinoma, along with certain mutations in DNA. The current treatment involves: Mohs surgery, excisional surgery, cryosurgery, LASER Surgery etc. But these therapies are painful and damage other cells and tissues nearby. Cyclopamine is smoothed inhibitor which stops the cell differentiation and thus helps in preventing basal cell carcinoma. Some other drugs have also been derived from cyclopamine like Vismodegib and Sonidegib but these also have some side effects. This review will be focusing on how inhibition of smoothed protein present in hedgehog pathway can be used to inhibit cell differentiation in basal cell carcinoma.

**PHY-PP-400****Current status and treatment for Epilepsy****Indu Kainth**

School of Pharmaceutical Sciences, Shoolini University, Solan, HP, India- 173212  
indukainth97@gmail.com

Status epilepticus (SE) is a medical emergency associated with significant morbidity and mortality. SE is defined as a continuous seizure lasting more than 30 min, or two or more seizures without full recovery of consciousness between any of them. The medications for SE include: 1) Acetazolamide: Sold under trade name Diamox, protein binding 70-90%, metabolism-none, biological half-life 2-4 hrs excretion in urine 90% MOA: it works by inhibiting activity of carbonic anhydrase; 2) Carbamazepine: It is a sodium channel blocker it preferentially bind to voltage gated sodium channel in their inactive conformation which prevent repetitive & sustained firing of an action potential; 3) Clonazepam: Primary MOA is modulation of GABA function in brain by benzodiazepine receptor, located on GABA(a) receptor, which in turn lead to enhanced GABAergic inhibition of neuronal firing; 4) Phenytoin: It blocks voltage gated sodium channel. this block sustained high frequency repetitive firing of action potential; 5) Vigabatrin: It irreversibly inhibits major degradative enzyme for GABA. It mainly uses for infantile spasms and adult refractory complex partial seizure.

Sponsors

# SPRINGER NATURE



**Dr. Willmar Schwabe**  
From Nature. For Health.



**Win Trust Pharmaceuticals Limited**  
Model Town, Ludhiana, Punjab

**Nicholas Pharma Healthcare, Mumbai**



**JHANIL HEALTHCARE PVT. LTD.**

Banking Partners



