INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

INNOPHARM1

First International Conference On
Novel Frontiers in Pharmaceutical and Health Sciences

10-11 October, 2015

M.P. Council of Science and Technology

Vigyan Bhawan, Bhopal, MP, India

ORGANIZING COMMITTEE

Conference President
Dr. Avijeet Jain

Conference Secretary
Dr. Prateek Jain

Conference Co-ordinator
Dr. Alok Pal Jain

Scientific Committee
Dr. Narendra Lariya (Co-ordinator)

Dr. Manish Chaurasia
Dr. Sushil Kasaw
Dr. Lokesh Deb
Dr. Piush Khare
Dr. Mayank Thakur
Dr. Santram Lodhi

Registration Committee
Dr. M L Kori (Co-ordinator)

Dr. Awesh Yadav
Dr. Yuvraj Singh Dangi
Dr. Ashish Jain
Dr. Divya Bansal
Dr. Surendra saraff
Dr. Umesh Gupta

Proceeding Committee
Dr. Gaurav Saraogi (Co-ordinator)

Dr. Aviral Jain
Mr. Anuj Asathi
Mrs. Harsita Jain
Mr. F A Toppo

Hospitality and Transportation Committee
Dr. Arvind Gulbake (Co-ordinator)

Mr. Harish Chandrawanshi
Mr. Mukesh Patel

Media Committee
Mr. Anaytullah (Co-ordinator)

Mr. Madhur Sharma
Mr. Alok Kesaharwani

Finance and Sponsorship Committee
Dr. Arun Pandey (Co-ordinator)

Mr. Nilesh Sahu
Mr. Rakesh Sahu

Publicity Committee
Dr. Rajesh Pawar (Co-ordinator)

Mr. Anchal Kesharwani

Sight Seeing Committee
Dr. Amit K Jain (Co-ordinator)

Mrs. Anamika Pandey

State Coordinator

Dr. G. Mathan
(Tiruchirappalli, Tamilnadu)

Dr. Vikash Kumar Ruhil
(Sarai Aurangabad, Haryana)

Ms. Ch. Sandhya
(Mysore, Karnataka)

Dr. Sai sailesh Kumar G
(Angamaly, Kerla)

Mr. Prashant L. Pingale
(Nashik, Maharashtra)

Dr. Subrata Mallick
(Bhubaneswar, Orissa)

Dr. Vishal Jain
(Raipur, Chattishgarh)

ADVISORY BOARD

International Board Members

Dr. Wong Tin Wui (Malasiya)	Dr. V. Ravichandran (Malasiya)	Dr. Aysu Yurdasiper (Turkey)	Dr. Payal Agrawal (USA)
Dr. Wesley L. C. Ribeiro (Brazil)	Dr. Kamlesh sahu (USA)	Dr. Maitree Suttajit (Thailand)	Dr. Alok Nahata (Malasiya)
Dr. Idress Hamad Attitalla (Libya)	Dr. Tarang Nema (Singapur)	Dr. Morakot Sukchotiratana (Thailand)	Dr. Chaiyavat Chaiyasut (Thailand)
Dr. Ammar Al-Temimi (Iraq)	Dr. Xiangming (Kain) Wu (Corvallis)	Dr. Raghavendra HL (Ethiopia)	Dr. Norhaniza Aminudin (Malasiya)
Dr. Milind Arai (Taiwan)	Dr. Duc P. Do (Chicago)	Dr. Shilpi Bhargava (Germany)	(Dr.) Payam Peymani (Iran)

National Board Members

Dr. Sunil K Jain	Dr. Vimal Jain	Dr. Neera Sahai	Dr. Navneet Khurana
Dr. Sushma Talegaonkar	Dr. Sarvesh Paliwal	Dr. Neeraj Mishra	Dr. Ashish Jain
Dr. Pushpendra Triphati	Prof. Sumit bhattacharya	Dr. Simant Sharma	Dr. Rakesh Yadav
Dr. Sanjay Jain	Dr. D.K Saraf	Dr. D K Sharma	Dr. Gurmeet Chawada
Dr. Pushpendra Jain	Dr. Swapnil Sharma	Dr. Deeraj Ahirwal	Dr. Ajay Sharma
Dr. Sanmati Jain	Dr. Jaya divedi	Dr. Prachi Saxena	Dr. Amol Kesharwani
Dr. Anshuman Shukla	Dr. Sunil Dubey	Dr. Pawan Jain	Prof. Aditya Travedi
Dr. Raviendra Chourasia	Dr. Gaurav Jain	Dr. Mahesh Prasad	Dr. Syed Ibrahim Rizvi
Dr. Davindra Soni	Dr. Manju Rawat	Dr. Ashok Budwani	Dr. S Siddique
Dr. Vijay Mishra	Dr. Mukesh Sharma	Dr. Manoj Goyal	Prof. C J Verma
Dr. R P Patel	Dr. Suresh Janadri	Dr. Anand Chourasia	Dr. Nitin Jain
Dr. Neelesh M Patel	Dr. Anil K Shrivastava	Dr. Murari Lal Soni	Dr. Garima Modi
Dr. Harish Rajak	Dr. Ankur Vaidhya	D. Nagasamy Venkatesh	Dr. Sunil Kumar Jain
Dr. Nitin K Jain	Dr. Shashank Singh	Dr. Pushpendra Tripathi	Dr. Prem Narayan Gupta
Mr. Anuj Modi	Dr. Kavita Rohit	Dr. Vikas Jain	Mr. Prabhat Jain

Industrial Board Members

Dr. Amit Nayak	Mr. Amit Jain	Dr. Vaibhav Dubey	Dr. Yaswant Gupta
Dr. Anubhav Jain	Dr. Neeraj Sethiya	Dr. Manish kumar Tiwari	Dr. Ashish Saxena
Dr. Jaywant Thakur	Dr. Vikesh Jain	Dr. Manoj Nahar	Dr. Davynai Dubey
Dr. Gaurav Pathak	Mr. Manish Rai	Mr. Pankaj Jain	Mr. Lalit Mishra
Mr. Rajendra S. Rajput	Mr. Tusar Samal	Mr. Punit Jain	Mr. A.K. Gupta
Mr. Rakesh Ranjan	Mr. Bharat Phatak	Mr. Sanjay Mittal	Mr. Akhil Chincholikar
Mr. Gourav Bhaiji	Mr. Mukul Kathriya	Mr. Ashish Saxena	Mr. Amol Pahariya
Mr. Manish Rai	Mr. Rahul Nayak	Mr. Vivek Jain	Mr. Khagesh Anuragi

Eminent Committee Members

Mr. Akshat Sharma	Dr. Nilesh Jain	Dr. Sudheesh Kumar	Ms. Neha Jain
Dr. Goapl Garg	Dr. Satish shilpi	Dr. Pradeep Singor	Dr. Neeraj upmanyu
Dr. Shailesh Sharma	Dr. Rakesh Sagar	Dr. Shailesh Jain	Dr. Nidhi Jain
Mr. Sharad Pandey	Mr. Amerendra	Mr. Prabhat Jain	Mr. Arun Patel
Mr. Rajesh Athya	Mr. Abhishek	Mr. Ajaj Khan	Dr. Awesh Yadav
Dr. R B Goswami	Mr. Vishnu Raj	Mr. Nitin Dwivedi	Dr. Karunakar Shukla

INDEX

Keynote / Invited Speaker

BANGLADESHI MEDICINAL PLANTS: A RICH SOURCE OF CHEMICAL DIVERSITY

Prof. Dr. Choudhury Mahmood Hasan

Vice-Chancellor, Manarat International University, Dhaka, Bangaldesh
Email: cmhasan@gmail.com

Abstract

Bangladesh, being a subtropical country, is a good repository of plants. There are about 5000 angiosperms distributed among 200 families. Around 500 of these are being used in the preparation of traditional medicines for the treatment of different diseases. There are about 400 herbal drug manufacturers in our country and more than 80 percent of the population use herbal medicine along with allopathic medicine.

Chemical studies on 100 local medicinal plants, belonging to 40 families, have resulted in the isolation and characterization of over 200 secondary metabolites, including 54 new molecules. The structures of these compounds were elucidated by spectroscopic methods (PMR, CMR, 2D-NMR, HREIMS, HRFAB etc.). The main classes of compounds represent terpenes (mostly diterpenes), alkaloids, coumarins, flavonoids, biphenyl heptanoids, neolignans etc. Of these, terpenes dominate over other classes of metabolites. *In-vitro* antimicrobial activities of these compounds have also been studied. Few of these, particularly diterpenes, showed significant antibacterial properties. One of the alkaloids,Cristatin A isolated from *Accaciaauriculiformis* (Leguminosae) showed activities against Telomeric G-quadruplexand C Myc Promoter G-Quadruplex. One new furanoidditerpeneCrispene E, isolated from *Tinosparacrispa* (Menispermaceae), found to be have significant toxicity against Stat3-dependent MDA-MB breast cancer cell line.

From the findings of chemical investigation, it appears that Bangladeshi medicinal plants are a rich source of diversified types of interesting secondary metabolites. Biological studies also indicate that these medicinal plants may be a potential source inthe search of lead molecules for new drug discovery.

Keywords: Medicinal plants, drug discovery, bioactives

YELLOW FEVER: PREVENTIVE INTERVENTIONS FOR PUBLIC HEALTH

Dr. Raghvendra Gumashta

People's College of Medical Sciences and Research Centre and Centre for Scientific Research and Development, Bhopal. Email: rgumashta@yahoo.com

Abstract

Yellow fever has not entered India. However, preventive interventions in resonance with the International Health Regulations (IHR) shall immensely benefit comprehensive national initiatives to address the gaps, deficiencies and challenges for addressing the public health threats of yellow fever in India. Evidence based analytical approach shall also assist existing policy, program, infrastructure, monitoring and evaluation mechanisms. Hence, ensuring appropriate measures to minimize the precursor conditions, situations and factors for yellow fever transmission in India is the need of the hour.

The efforts including but not limited to national consultations on yellow fever, creation of special public health task forces, ensuring availability of 17 D vaccines and pool funds, interdepartmental commitments, vector control measures, capacity building, surveillance and research studies will ensure preventive interventions on regular basis. Adhering to IHR regulations for protocol observance shall assist in addressing the possible lacunae. Strategic policy initiatives directed towards the identified critical issues shall pave way to sustainable program design, development and implementation for preventing entry of yellow fever in India, while ensuring high level political commitment and advocacy inputs. Large scale deliberations among teaching and research institutions of public health will further identify other unaddressed areas as well for preventing the entry of yellow fever in India. Risk reduction through preventive interventions in the epidemiological triad is the answer to addressing public health threats of yellow fever in India.

Keywords: Epidemiological triad, IHR, surveillance, vector control, yellow fever

MICROWAVE AS SKIN PERMEATION ENHANCER IN TRANSDERMAL DRUG DELIVERY

Dr. Tin Wui Wong[a,b]

[a]Non-Destructive Biomedical and Pharmaceutical Research Centre, iPROMISE, [b]Particle Design Research Group, Faculty of Pharmacy, Universiti Teknologi MARA, 42300, Puncak Alam, Selangor, Malaysia
Email: wongtinwui@salam.uitm.edu.my

Abstract

Transdermal drug delivery provides a controlled continuous delivery of drug molecules from skin surfaces, through its layers, and into the systemic circulation. It bypasses enzymatic digestion in gastrointestinal tract and hepatic portal system which can lead to excessive drug degradation and therapeutic ineffectiveness. Nevertheless, the skin permeation propensity of most drugs is practically low due to the impermeable nature of stratum corneum, the uppermost layer of epidermis. A vast range of innovation has been created to enhance the skin permeability to drugs. The current advances include microneedles, iontophoresis, sonophoresis, photomechanical waves, electroporation and pressurized air techniques. Starting from the year of 2008, Non-Destructive Biomedical and Pharmaceutical Research Centre investigates microwave of specific characteristics for its potential as transdermal permeation enhancer. The microwave is found to be able to exert spacing of lipid architecture of stratum corneum into structureless domains and promote transdermal drug delivery. The microwave is able to act as a radiation permeation enhancer and works synergistically with oleic acid, a chemical permeation enhancer, to promote transdermal drug delivery. The performance of microwave as transdermal permeation enhancer is challenged by the type of dosage form applied on skin, where the recent findings indicate that polymeric macromolecules from semisolid samples can act as a binder to the intercellular spaces created by microwave, thereby leading to reduced drug permeation. Microwave is reckoned to be the next generation technology in transdermal delivery. More research and development works are required to examine its worth in drug delivery, biomedical effects and safety with respect to the advances of nanotechnology and biologics.

Keywords: Transdermal drug delivery, controlled release, microwave

HERBAL APPROACHES TO PREVENTION AND TREATMENT OF LIVER DISORDERS

Majid Asadi-Samani[a,b], Mahmoud Rafieian-Kopaei[a], Hedayatollah Shirzad[b,*]

[a]Student Research Committee, Medical Plants Research Center, [b]Cellular and Molecular Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran
[*]Email: shirzadeh@yahoo.com

Abstract

Liver diseases are are one of the most worldwide health problems. The available synthetic drugs to treat liver disorders cause further damage to the liver hence herbal drugs have become increasingly popular and their use is wide-spread. Hundreds of plants have been so far examined to be taken for a wide spectrum of liver diseases. In this review, we have introduced some of medicinal plants with a particular attention to their hepatoperotective effects in the world and Iranian folk medicine. Databases such as Web of Science, PubMed, Scopus, Science Direct, ISC, and SID were searched for search terms consisted of Medicinal plants, Iranian folk medicine, Liver diseases, hepatoprotective, antioxidant, anti-inflammatory, and antihepatotoxic, alone or in combination. According to reliable scientific information obtained from medicinal plants research, plants such as *Silybummarianum*, *Glycyrrhizaglabra, Phyllanthus* species (amarus, niruri, and emblica), and *Picrorhiza kurroa* have been widely and most of the times fruitfully applied for the treatment of liver disorders. Also *Allium hirtifolium* Boiss*., Allium sativum, Ammimajus* L*., Apium graveolens* L*., Agrimonia eupatoria* L*., Berberis vulgaris* L*., Calendula officinalis, Cynara scolymus, Citrullus lanatus* Thunb*, Gundelia tournefortti, Marrubium vulgare, Nigella sativa* L*., Portulaca oleracea* L*., Prangos ferulacea* L*., Prunus armeniaca* L*., Taraxacum officinale, Tragopogon porrifolius* and *Ziziphus vulgaris* Lam are some of the medicinal plants that have been used mainly for the treatment of liver disorders in Iranian folk medicine. In conclusion, herbal have high concentration of antioxidant components like silymarin, picroside-I and another flavonoids that provided protection to hepatocytes exposed to CCl4, reactive oxygen species (ROS) and another hepatocytotoxics with less side effects, therefore using herbal components can be an ideal solution for liver disease.

Keywords: Herbal drugs, liver Injury, hepatoprotective activity, hepatotoxicity.

THE MEDICINAL PROPERTIES OF *IPOMOEA OBLONGATA* (E. MEY. EX. CHOISY)

Polori K L*[a], Madamombe-Manduna I T[a], Mashele S S[a]

[a]Department of Health Sciences, Faculty of Health and Environmental Science, Central University of Technology Free State, Bloemfontein, South Africa, 9301
Email: ketlarengliza@yahoo.com

Abstract

The aim of this study was to determine the phytochemical content, antioxidant, anticancer and antidiabetic properties of *Ipomoea oblongata* (Mothokho), a medicinal plant used by traditional medical practitioners of Thaba-Nchu in the Free State. The study carried out was in order to validate the ethnomedicinal claims made by the traditional healers and evaluate its potential as a novel therapeutic agent. The phytochemical constituents of the plant were determined using standard screening methods. The antioxidant (free radical scavenging activity) was carried out by means of the 2, 2-diphenyl picryl hydrazyl (DPPH) assays. Sulforhodamine B assay was used to screen for anticancer activity on breast (MCF7), colon (HCT116) and prostate (PC3) cancer cell lines. Glucose uptake in C2C12 muscle cells were used to evaluate the antidiabetic potential of Ipomoea oblongata. Aqueous, methanol and dichloromethane extracts were tested in all assays. The methanol extract of *I. oblongata* showed remarkable (99.03%, 98.39, 71.31%) antioxidant potential which explains its use in oxidative stress related diseases such as arthritis and cancer. Phytochemical tests showed the presence of carbohydrates, glycosides, steroids, terpernoids, alkaloids, flavonoids and tannis. However, the extracts were inactive against the cancer cell lines. Glucose uptake by the C2C12 muscle cells was increased by over 150% and was comparable to that of insulin and metformin, suggesting good antidiabetic activity. In conclusion, there is a correlation between the medicinal properties found in *Ipomoea oblongata* and the ethnomedicinal uses cited by the traditional healers.

Keywords: *Ipomoea oblongata*, medicinal plants, antioxidant, anticancer, antidiabetic, sulforhodamine B

DEVELOPMENTS IN LONG ACTING INJECTABLE FORMULATIONS

Dr. Kapil Khatri

Ravishankar College of Pharmacy, Bypass Road Bhanpur Square, Bhopal (MP) 462010, India

Abstract

Long acting injectable formulations for long-term controlled drug release have manifested into a range of products designed to target optimal therapeutic dosing requirements and improved therapy for a number of drugs. Some formulations are still in an experimental phase while others have gained widespread acceptance and are commercially available. Importantly, long-acting formulations of therapeutic agents have been used to avoid missing doses or treatment fatigue to prescribed lifelong medications in a number of different medical fields, with demonstrable success. However, such formulations are associated with challenges, such as the prolongation of adverse events with the persistence of drug concentrations and concerns over the development of resistance. In the talk, key concepts in the development of injectable controlled-release formulations for different class of drugs and then using this information to identify key issues impeding greater widespread use of depots will be discussed.

Keywords: Control drug release, injectable, medication

ROLE OF PHARMACOEPIDEMIOLOGY FOR DRUG DISCOVERY AND DEVELOPMENT (PRE-CLINICAL SURVEY, CLINICAL TRIAL AND POST MARKETING SURVEILLANCE)

Payam Peymani, Saba Afifi and Kamran Bagheri Lankarani

Pharmacoepidemiology & Drug Safety Department, Health policy Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Pharmacoepidemiology is the study of the use and the effects of drugs, medical devices or vaccines in large numbers of people (Strom, 1994). Epidemiologists working in the pharmaceutical industry use the principles of descriptive epidemiology in addition to analytical and clinical epidemiological applied concepts and methods to assess the impact, use and effects of these products in the population and in clinical trial settings. As an evolving field, the influence of pharmacoepidemiology continues to be broadened with enhance demands for a comprehensive understanding of the patient population within the development and post-marketing phases of a Drug's lifecycle. Drug's lifecycle includes four phases: discovery and research (pre-clinical phase), clinical development (Clinical trial), and post-marketing research.

Applications of pharmacoepidemiology to the pre-approval safety screening of investigational drugs are examined and compared with the post-approval applications. Pre-approval epidemiologic evaluations of drug safety can complement clinical assessments of rare, serious adverse events occurring in clinical trials. Applications include retrospective identification of patient risk factors for adverse drug events and incidence comparisons based on historical controls. While similar in concept to applications of pharmacoepidemiology in the analyses post-marketing surveillance projects, answers are often needed in days rather than weeks and the emphasis is on whether human studies can continue. The approval to market a drug, device or vaccine depends primarily on the results of the clinical trial which includes investigational trials with a variety of potential designs; generally, randomized, double-blind placebo-controlled studies are considered the gold standard. However, even these studies are not without limitations, including relatively small sample sizes, selective populations, short follow-up and limited generalizability. Furthermore, problems seen after product approval has placed demands on manufacturers, regulators and policy makers to more effectively monitor and expand the knowledge of safety in the post-authorization period. This requires a proactive plan, including an assessment of research gaps and appropriate study designs, beginning in the clinical development phase so that strategies can be initiated upon drug approval. Post-marketing surveillance, or more specifically phase IV studies, can either be interventional or non-interventional by design, with epidemiologists typically focusing on those that are non-interventional. Again, descriptive or observational designs are used to evaluate drug utilization patterns; additionally, with a study design that allows for exposure in a broader range of patients, more real-world information about thedrug's safety and effectiveness can be.

Keywords: Pharmacoepidemiology, drug discovery and development, pre-clinical, clinical trial, post marketing surveillance

COMBINATORIAL DIAGNOSTIC BATTERY- A PREREQUISITE FOR IMPROVED DIAGNOSIS OF HEPATITIS B: CHALLENGES FOR A DEVELOPING NATION

Dr. Puneet Gandhi

Bhopal Memorial Hospital & Research Centre, Bhopal, India

Abstract

Hepatitis B, an inflammatory disease of the liver and an emerging global health problem has varying endemicity in India. It is categorically represented by a DNA virus that can establish a persistent infection progressing to cirrhosis and even hepatocellular carcinoma. Importunate hepatocyte integration along with an impaired immune system, demands continuous diagnostic monitoring to resolve the infection. The gold standard for viral diagnosis in most clinical settings is still serological testing, which tends to lose out on occult cases and transient infections. Employing real time nucleic acid amplification assays ensures a high degree of sensitivity and specificity in diagnosis. In addition, genotyping of the organism can furnish important information for personalized therapy regimen.

However, the need for evaluating the sensitive immune Th1-Th2 system cytokine balance is often overlooked during diagnosis. Currently, cell mediated and humoral immune response of the host to resolve and avoid viral reinfection, is estimated using traditional ELISA assays. Nevertheless, ELI spot assays, antibody arrays, multiplex bead-based assays and flow cytometric assays are also in use, wherever accessible. Based on extensive clinical experience, our team suggests a novel approach of using a combination of tests for diagnosing aspects, viral replication and immune status; which are an integral part of varied clinical sequelae of hepatitis B infection. Development of a new broad-spectrum high throughput platform that provides an advantage of simultaneous detection of multiple parameters in serum, will certainly impact patient care in the near future.

Keywords: Diagnostic battery, hepatitis B, Assay

VIRTUAL SCREENING AND MOLECULAR DYNAMICS SIMULATION FOR ALLOSTERIC POCKET OF DENGUE VIRUS NS2B/NS3 PROTEASE

Azat Mukhametov[a]*, E. Irene Newhouse[b], Nurohaida Ab Aziz[a], Jennifer A. Saito[a], Maqsudul Alam[a,b,c]*

[a]Centre for Chemical Biology, Universiti Sains Malaysia, 11800, Penang, Malaysia, [b]Advanced Studies in Genomics, Proteomics and Bioinformatics, [c]Department of Microbiology, University of Hawaii, 2538 McCarthy Mall, Honolulu, HI 96822, United States

***Email: azatccb@gmail.com, alam@hawaii.edu**

Abstract

In present study, molecular mechanism of allosteric inhibition of Dengue NS2B/NS3 protease was studied and new allosteric inhibitors identified. Allosteric pocket of NS2B/NS3 protease was identified with Site Map application (Schrodinger); virtual screening of small molecule databases performed with Glide, followed by Molecular Dynamics (MD) simulations for protein and protein-ligand complexes (AMBER/NAMD), MM PB/GBSA calculations of free energy of binding, calculation of hydrogen bonds occupancies, preliminary *in vitro* assessment of inhibitory activity with recombinant protease. Twelve compounds were selected from the results of virtual screening: synthetic compounds, chalcones, and adenosine derivatives. Docking of libraries of nucleosides and hexoses revealed the ATP and Glucose are able to bind the Allosteric Pocket of DENV NS2B/NS3 protease. All protein-ligand complexes were stable during MD simulations. Preliminary study of activity of the identified compounds in recombinant viral protease assay confirmed inhibiting activity for all compounds. In conclusion, two feasible molecular mechanisms of inhibition were studied. The identified ligands worked through both: a) creating hindrances for substrate interaction with the catalytic triad, or modulating the activity of the catalytic triad by electron density perturbation, and b) interfering with the motion of the C-terminal of NS2B into the allosteric pocket during formation of the "closed" protein conformation.

Two parameters govern allosteric inhibition activity: strength of binding, and geometrical fitting into the underlying mechanism of inhibition. While these two parameters vary among the compounds found, the adenosine derivatives fit best with both parameters.

Keywords: Dengue, DENV2, NS2B/NS3 protease, ATP, glucose, allosteric inhibitors

UREASE INHIBITORY ACTIVITY OF *HIPPOPHAE RHAMNOIDS* AND *CASSIA FISTULA*

***Barkat Ali Khan[1,2], Naveed Akhtar[2]**

[1]Department of Pharmacy, Faculty of Pharmacy and Alternative Medicine, The Islamia University of Bahawalpur, Bahawalpur, Pakistan, [2]Department of Pharmaceutics, Faculty of Pharmacy, Gomal University, D. I. Khan
Email: barki.gold@gmail.com, barkat.khan@gu.edu.pk

Abstract

The pragmatic use of plants as medicine can be traced back over five millennia to ancient documents of early civilizations such as in China, Egypt, India, and the Near East, but is definitely as old as mankind. These medicines initially acquired the form of crude drugs such as poultices, tinctures, powders, teas and other herbal formulations. At least 119 chemical substances from 90 plant species are important drugs used all over the world, many of them containing compounds derived from or modeled after naturally occurring lead molecules and 74% of these come from conventional medicinal plants. 11% of the 252 drugs believed as basic and essential by the WHO are exclusively of plant origin. In this study, we have scrutinized antiurease activity of Et-OH and Me-OH extracts of *H. rhamnoides* and *Cassia fistula* collected from Gilgit Baltistan and old campus of Islamia University Bahawalpur respectively. Berthelot assay was employed for the determination of antiurease activity. The enzyme activity and inhibition was measured through catalytic effects of urease on urea by measuring change in absorbance in the absence and in the presence of inhibitor at 625 nm using Schamadzu-1601 spectrophotometer. In the study, both Et-OH and Me-OH extracts of *H. rhamnoides* (91.69%±1.21) and *C. fisstula* (79.44%±0.55) showed stronger action against urease activity. An overview on the medicinal uses of *H. rhamnoides* and *C. fisstula* showing antiurease activity may forecast their possible traditional use for stomach problems. In conclusion, this study may help to explain the beneficial effects of these plants against stomach infection associated with pathogenic strains of *H. pylori* as Urease is the most prominent protein component of *H. pylori.*

Keywords*: H. pylori*, urease, botanicals

MINING THE NATURAL PRODUCTS IN SEARCH OF EFFECTIVE QUORUM-SENSING INHIBITORS

Dr. Vijay Kothari

Nirma University, Institute of Science, Ahmedabad, Gujarat, 382481 India

Abstract

Quorum sensing (QS) is a means of intercellular communication among bacteria. It is a system dependent on bacterial population density, that regulates expression of many genes including those involved in production of virulence factors, biofilm formation, efflux pump activity, toxin production, pigment production, etc. Consequently, QS is increasingly being viewed as an attractive target for the development of novel anti-infective measures that do not rely on the use of antibiotics. Anti-QS seem to be a promising strategy to combat bacterial infections as it is less likely to allow bacteria to develop resistance, since it does not impose that strong selection pressure. A number of anti-QS approaches have been documented, and natural products (plant-based and others) are being studied in this context. Screening the natural products for potential anti-QS property may pave the way for development of novel anti-virulence leads, and can help in dealing with the problem of antibiotic-resistance among bacterial pathogens.

Our lab is currently involved in screening of various natural products including plant extracts prepared by Microwave Assisted Extraction (MAE) method, as well as, selected pure plant metabolites (e.g. catechin) for their potential QS-inhibitory property. Effect of the test extracts/compounds on QS-regulated violacein (purple pigment) production in the bacterium *Chromobacterium violaceum* is being investigated, using the broth dilution assay. Following identification of the potent plant products (and identifying the major phytochemical metabolites present in the active extracts) exhibiting good QS-inhibitory efficacy, efforts will be made for finding out the mode of action i.e. whether the effective plant product(s) is acting as signal-supply inhibitor, or as signal-response inhibitor. For achieving this, besides wet-lab approach, we shall also be using certain molecular docking tools (e. g. GLIDE/AutoDock) to characterize the possible interaction(s) of the plant compounds with the potential targets in the bacterial cell. The potent plant products effective as QS-inhibitors against *C. violaceum*, will also be tested against other bacteria (e. g. *Pseudomonas aeruginosa*) to find out whether they are narrow-spectrum QS-inhibitors, or broad-spectrum. This study may result in identification of potential QS-inhibitory plant products, which may then further be explored for their possible therapeutic use either independently or along with conventional antibiotics. Such studies for finding new antivirulence drugs may help revitalising the drug-development pipeline with new targets too, as QS influences expression of a large proportion of genome.

Keywords: Quorum sensing, inhibitors, plant product

EFFECTS OF DIRECT AND CONTROLLED DELIVERIES OF LOVASTATIN AND TOCOTRIENOL ON HEALING OF OSTEOPOROTIC FRACTURE

Nurul 'Izzah Ibrahim[a], Mohd Fadhli Khamis[b], Mohd Faridz Mohd Yunoh[c], Shahrum Abdullah[c], Norazlina Mohamed[a], Ahmad Nazrun Shuid[a]

[a]Department of Pharmacology, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur Campus, 50300 Kuala Lumpur, Malaysia, [b]School of Dental Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia, [c]Department of Mechanical and Materials Engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia
Email: anazrun@yahoo.com

Abstract

Osteoporosis could increase fracture risk and delay fracture healing. Recently, oral combination of statin and tocotrienol was shown to promote fracture healing of osteoporotic bone. However, the high daily oral doses could be costly and may cause serious side effects. This study aimed to deliver lovastatin and tocotrienol directly to achieve maximal concentration at fracture site. The one time injection was achieved via controlled and targeted delivery system by combining lovastatin and tocotrienol with their polymer carriers. Ovariectomised rat was used as the postmenopausal osteoporosis model and standardized fracture was induced on the upper third of right tibia and fixed with plate and screws. Lovastatin or tocotrienol was delivered directly to the fracture site either as single injection or combined as two injections. Following 4 w of treatment, the fracture healing of the callous was evaluated using micro computed tomography (CT) and biomechanical strength parameters. Micro CT and biomechanical assessments of the fracture callous indicated that combination of statin and tocotrienol produced the best healing. In conclusion, combination of tocotrienol and lovastatin administered via the controlled delivery system promoted the healing of osteoporotic fracture.

Keywords: osteoporosis, delivery, statins, tocotrienol, fracture

ETHNOPHARMACOLOGICAL SURVEY AND DOCUMENTATION OF TRADITIONAL HEALTH CARE PRACTICES OF NORTH–EAST INDIA: A SHORTEST PATH FOR DRUG DISCOVERY

Dr. Lokesh Deb*

Pharmacology Laboratory, Natural product Chemistry & Pharmacology Programme, Institute of Bioresources and Sustainable Development (IBSD), Department of Biotechnology, Government of India, Takyelpat, Imphal, Manipur, North-East India
Email: lokeshdeb.ibsd@nic.in

Abstract

Traditional health care practices are still being followed extensively in North East India. This is the major or the only medical facility available in some rural areas of the region. Cross-cultural ethno-pharmacological survey was conducted to document traditional health care practices by traditional health care practitioners of North-East India. All together, 89 traditional practitioners belonging to 17 ethnic communities in nine districts of the Manipur state was interviewed. A predesigned questionnaire was used for interviews, which included queries for type of ailments treating, symptoms, bioresources used, method of preparation, dosage forms, formulation, unit doses. The entire interviews done in the residence of respective traditional practitioners, their patient handing and preparation of medicinal formulations were documented in written and audio-visual format. The survey recorded traditional knowledge on 1223 formulations used for 64 human ailments. Six hundred eighty five plant products, 63 animal products and 47 organic/inorganic materials were found to be used in these 1223formulations. Different plant species including *Zingiber officinale* (Zingiberaceae)*, Cocos nucifera* (Arecaceae)*, Oroxylum indicum* (Bignonaceae)*, Curcuma longa* (Zingiberaceae) and *Allium sativum* (Liliaceae) used by maximum number of traditional practitioners in maximum number of formulations. This particular method of documentation keeps traditional knowledge alive. The WHO estimated perspective of traditional medicine across the world. These observations support therapeutic worth of Traditional medicines of North-East India. Having generated a large database in course of this survey, next focus was targeted for the scientific justification of traditional medicines with an aim to develop commercially viable products. An anti-arthritic formulation, antihypertensive agent, anti-fertility agent were scientifically evaluated to justify the traditional claim of traditional practitioners. These observations established the traditional claim and thus Ethno-pharmacological research could be a shortest path for drug discovery.

Keywords: Drug discovery, ethnopharmacology, survey

MARINE SPONGE BIOACTIVE COMPOUNDS OF MUMBAI COASTAL REGION AND THEIR PHARMACOLOGICAL PROPERTIES

Maushmi S. Kumar*

School of Pharmacy and Technology Management, SVKM'S NMIMS, Mumbai
Email: maushmiskumar@gmail.com

Abstract

A variety of biologically active compounds with unique structures and pharmacological properties have been reported to occur in marine organisms. Demospongiae, an important class of marine sponge is known for producing the largest number and diversity of secondary metabolites isolated till recent times. Our work covers the diverse class of bioactive compounds isolated for therapeutic drug applications from different marine sponges. It is an attempt to update the marine research community with our ongoing search results for bioactive secondary metabolite from marine sponge *Spongosorites halichondriodes*, exhibiting antibacterial, antifungal, cytotoxic, anti-inflammatory and immunomodulatory activity. It is based on the study, undertaken to investigate the bioactive compounds of *Spongosorites halichondriodes* (order Halichondrida, family Halichondriidae) a predominant marine sponge collected from western coast of India. The sponge *S. halichondriodes* extracts possessed antibacterial, antifungal, anti-inflammatory as well as immunosuppressant activity.

Keywords: Antimicrobial, marine source, bioactives

ROLE OF BIOINFORMATICS IN IDENTIFYING NEW MOLECULAR TARGETS FOR DRUG DISCOVERY

Dr. Surendra K Jain

Sagar Institute of Research and Technology, Pharmacy, Bhopal, MP, India

Abstract

Bioinformatics is the application of computer technology to biology in order to harness the voluminous amount of genetic and other biological information emerging from numerous biological research endeavors. Bioinformatics occupies a central and essential role in drug discovery. Classical drug discovery has largely proceeded on the basis of trial and error. Bioinformatics has essentially replaced bench chemistry in the hunt for better drugs. Bioinformatics is essential for using genomic information to understand human diseases and identify new molecular targets for drug discovery. Bioinformatics harvest genetic information through use of specialized computer software programs for database creation, data management, data warehousing, data mining and global communications.

Bioinformatics can be defined as "The collecting, Archiving, Organization and Interpretation of Biological Data". Application of CS and informatics to biological and Drug Development science Bioinformatics is the field of science in which biology, computer science, and information technology merge to form a single discipline. The ultimate goal of the field is to enable the discovery of new biological insights as well as to create a global perspective from which unifying principles in biology can be discerned Bioinformatics can significantly reduce the overall time and cost of drug discovery process by reducing the hit and trials that are involved in the conventional drug discovery by, Identification of homolog's of functional proteins, Identification of targets by cross species examination, Visualization of molecular models, Docking, vHTS, QSAR, Pharmacophore mapping.

Keywords: Bioinformatics, pharmacophore, drug discovery

Oral Presentation

THE ANTI-CATARACT EFFECT OF COENZYME Q10 IN RABBITS

[1]Baha'a A. Abdul-hussein, [2]Ahmed Salem Mahmood

[1]Department of Pharmacology, College of Veterinary Medicine, University of Al-Qadissiya, Al-Qadissiya Iraq, [2]College of Pharmacy, University of Anbar, Ramady, Iraq
Email: ahmedsalimpharmacist@hotmail.com

Abstract

Cataract is the opacity of the lens which progressively impairs the light transmission to the retina and finally prevents the vision, these opacity results from the oxidative process in the eye. The study aimed to prevent opacity of the lens by using Coenzyme Q10 as eye drops. Sodium selenit 0.01w/v injected intravitreal to the rabbits eye to induce the disease, a group of rabbits were receive Coenzyme Q10 eye drop, and another group received distilled water, pre and post induction, cataract maturity was measured to evaluate the opacity deterioration. The group of rabbits that received distilled water after induction of cataract, the opacity occurred within 48-72 h and the mean score of opacity reached to (4±0.00), while Coenzyme Q10 treated group the degree of opacity was (1.5±0.02) and there was a highly significant difference ($p<0.01$).

Keywords: Cataractogenesis, Oxidative stress, Coenzyme Q10.

POTENCY OF TURMERIC ROOT DECOCTION ON SPERM INFERTILITY OF MALE MICE TO SUCCEED FAMILY PLANNINGPROGRAM IN WEST JAVA SOCIETY

Diah Dhianawaty[1*], Ramdan Panigoro[1], Anna Martiana[1], Samsudin Surialaga[1], Herry Yulianti[2], Adi Santosa Maliki[3]

[1]Biochemistry and Molecular Biology Department, [2]Department of Pathology Anatomy, [3]Department of Anatomy and Cellular Biology. Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia
Email: dhianawaty@yahoo.co.id

Abstract

The aim of this research is to evaluate the effect of turmeric rhizome decoction on sperm fertility of male mice. Ten male mice were divided randomly into control and tested groups. The control and the tested groups were given water as vehicle and turmeric rhizome decoction at the dose 517.4 mg/kg-bw, respectively for 30 d. Mice were put under anesthesia by urethane, and were counted the percentages of the sperm motility, morphology and sperm concentration, respectively. The results were compared with seminiferous tubules cells images. The rapid progressive sperm motility of the control and the tested groups were 53±6.4% and 13±3.6%, respectively, The difference was significant ($p<0.001$). The sperm normal morphology in both the control and the tested groups were 57.8±5.76% and 40.8±2.72%, respectively, The difference was significant ($p<0.01$). However, the difference of sperm concentration of both groups was not significant. Seminiferous tubules cells images of tested group showed the disruption in sertoli cells with present cellular vacuolization, and pyknotic nuclei. In conclusion, The turmeric rhizome decoction intake at the dose of 517.4 mg/kg-bw of mice has a significant effect in decreasing the sperm motility and morphology. The decoction caused sperm abnormality or asthen teratozoospermia. The habit of drinking turmeric decoction can succeed family planning program.

Keyword: Sperm infertility, *curcuma longa* L., turmeric, decoction of turmeric.

BIOACTIVITY SCREENING AND GCMS ANALYSIS OF *BAUHINIA PHOENICEA* LEAVES

Regi Raphael K[1], Alby Alphons Baby [1,2]

[1]St. Mary's College, Thrissur-20 Kerala, [2]R & D Centre Bharathiar University, Coimbatore

Abstract

Bauhinia phoenicea Wight & Arn is a medicinal plant endemic to Western Ghats. In traditional medicine, it used against diabetes, skin allergies, fungal infections and worm disturbances. To the best of our knowledge, any scientific study on the medicinal properties of this plant is not yet reported. The objective of the study was to validate the ethnomedical importance of the plant through antimicrobial, anthelmintic and antioxidant property screening and identification of pharmacologically active compounds present through GCMS analysis. Pharmacological activity profiling includes antibacterial, antifungal, anthelmintic and antioxidant property screening using ethanol extract, which preliminary analyses its folk claim. For antimicrobial studies, well diffusion assay used, for anthelmintic screening Indian adult earthworm *Pheretima posthuma* is used and its mortality rate and time taken for paralysis in varying concentrations of plant extract were noted. To determine the anti-oxidant property DPPH free radical scavenging and super oxide anion-scavenging assay were used. Qualitative phytochemical screening was performed using the standard protocols of J. B Harborne. The ethanol extract was given for GCMS analysis to identify the pharmacologically active principles. The extract showed significant activity against all pathogens. Maximum zone of inhibition observed in *Salmonella typhi* and *Klebsiella pneumoniae* in their higher concentration (500µg/ml). The anthelmintic activity of ethanol extract evaluated on Indian adult earthworms *Pheretima posthuma*, exhibited dose dependent spontaneous mortality, and evoked responses to pin prick and effects compared with that of Albendazole. The ethanol extract showed potent DPPH free radical scavenging and super oxide anion scavenging properties with IC 50 values 92±0.92 and 62±1.34 respectively. The preliminary qualitative analysis of *B. phoenicea* leaf indicated the presence of alkaloids, saponins, phenols, steroids and flavonoids. Result of GCMS analysis showed the presence of 19 compounds, which include valuable compounds like Hexadecanoic acid, Oleic acid etc. According to our results, it is concluded that leaf of *B. Phoenicea* has significant antimicrobial, anthelmintic and antioxidant properties supporting the folk medicinal use of this species. The presence of compounds which have proved pharmacological importance also suggesting that this plant is a reservoir of many valuable herbal drugs, further procedures of isolation and characterization of active principles are in progress.

Keywords: *Bauhinia phoenicea,* antimicrobial, anthelmintic, antioxidant property screening and GCMS analysis.

ANTIOXIDANT AND ANTI-BREAST CANCER ACTIVE PRINCIPLES ISOLATED FROM *LIMONIA ACIDISSIMA*

Abstract

Work was carried out with objective to explore the naturally-occurring antioxidants having anti-breast cancer properties from plant origin since oxidants play a crucial role in developing various human diseases. The purpose of the research was to explore the antioxidant and anti-breast cancer properties of *Limonia acidissima*. The isolated compounds from *Limonia acidissima* were screened for their anti-breast cancer and antioxidant activity. Several assays were employed to determine the antioxidant activities such as: DPPH free radical scavenging assay, total antioxidant capacity assay, ferrous reducing antioxidant capacity, hydroxyl radical scavenging assay and lipid peroxidation inhibition assay. The anti-breast cancer activity was assessed by Trypan blue exclusion assay and MTT Assay. Majority of the extracts showed strong antioxidant activities related to the standard. Results indicate that two isolated compounds which contribute importantly to the antioxidant and anti-breast cancer activity of Limonia, provide a scientific basis for the use of this plant in traditional medicine. Their structures were determined on the basis of spectroscopic and chemical methods. The most active compound was found to be Acidissimin along with another compound i. e, Unsaturated Di galacturonic acid. They caused a significant decrease in lipid peroxidation and improvement in the antioxidant enzymes level. In conclusion, our results revealed that isolated compounds from *Limonia acidissima* possess significant antioxidant and anti breast cancer properties.

Key words: Breast cancer, anticancer, antioxidant.

CURCUMIN IN MUCOSAL AND CUTANEOUS DISORDER: FROM KITCHEN TO CLINIC

Dr. Arpita rai[1*], Dr. Ansul kumar[2], Dr. Shamimul hasan[1], Dr. Shazina saeed[3]

[1]Department of Oral Medicine and Radiology, Faculty of Dentistry, Jamia MIllia Islamia, New Delhi; [2]PGIMER DR. RML Hospital, New Delhi; [3]Department of Human Genetics, University of Pittsburgh

Abstract

Turmeric, the golden spice, is the dried rhizome powder of *Curcuma longa*, a perennial herb of the Zingiberaceae family has been used as dye, flavouring agent, food additive, medicinal herb and in cosmetics. Curcumin (diferuloylmethane), the major active component of turmeric, is a widely studied nutraceuticals and was first shown to exhibit antibacterial activity in 1949. Curcumin has been shown to possess anti-inflammatory, hypoglycemic, antioxidant, wound-healing, anti-apoptotic, pro-angiogenic, chemo-preventive, chemotherapeutic, anti-hyperalgesic, photodynamic and antimicrobial activities. Extensive preclinical studies over the past three decades have indicated curcumin's therapeutic potential against wide range of human diseases and its direct interaction with numerous signaling molecules. This paper reviews the role of curcumin in oral mucosal and cutaneous disorders. The spectrum of therapeutic potential in oral mucosal lesions has been explored in conditions like oral submucous fibrosis, oral lichen planus, mucosal changes secondary to reverse smoking, leukoplakia, mucositis, gingival wound healing and head and neck cancer. Over the last decade, there has been increasing interest in the medicinal properties of curcumin in treating various skin conditions like vitiligo, psoriasis, scleroderma and lupus. It has traditionally been used for pain and inflammation associated with acne, skin rashes and warts. Numerous studies reveal the protective effect of curcumin against photo damaged skin, against malignant fungating wounds, benefits in skin infections, skin cancer and its radio-protective and radio-recovery activities. Curcumin is quite safe and the varied biological properties and the lack of toxicity even at higher doses make it attractive to explore its use in various disorders.

Keywords: Curcumin, herb, cosmetic.

APOPTOSIS INDUCTION, CELL CYCLE ARREST AND *IN VITRO* AND *IN SILICO* ANTICANCER ACTIVITY OF ANETHOLE IN BREAST CANCER CELL LINES

Sumathi S, Padma P. R.

Department of Biochemistry, Biotechnology and Biotechnology Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore 641 043

Abstract

Breast **cancer is a multifactorial disease that leads to diverse molecular tumor subtypes and its current treatments have a number of undesired adverse side effects. Natural compounds may reduce these. Currently, a few plant products are being used to treat cancer. In this study, anethole,** a phenyl propene **naturally occurring,** organic compound that is widely used as a flavoring substance, that occurs widely in nature, in essential oils **was investigated for cytotoxic properties and anticancer activity against triple negative breast cancer cell line MDMB231 and as well as normal breast cell line HBL 100. Cytotoxicity was assessed using MTT assay. Fluorescence microscopy showed that anethole was able to induce apoptosis in breast cells in a time dependent manner. Flow cytometry further revealed breast cells treated with anethole to be arrested in the S phase. Phosphatidyl serine properties present during apoptosis enable early detection of the apoptosis in the cells. Using annexin V/PI double staining it could be shown that anethole induces early apoptosis in breast cells. It could be concluded that anethole showed a promising cytotoxicity effect against TNBCs and safe to untransformed breast cells. *In silico* studies were carried out by performing docking studies with cancer and apoptotic targets. The results showed that anethole was effective in inducing cell death mediated by apoptosis and possessed good ADME properties.**

Keywords: Apoptosis, cytotoxicity, anethole, ADME.

ALPHA-GLUCOSIDASE AND ALPHA-AMYLASE ENZYMES INHIBITORY ACTIVITY OF *KOLAKHAR:* A TRADITIONALLY USED LOCAL SODA OF ASSAM

Pallab Kalita[*a], Chandi Charan Kandar[b], Biplab Kumar Dey[a]

[a] Institute of Pharmacy, Assam down town University, Guwahati, Assam, India, [b] Institute of Pharmacy Jalpaiguri, Department of Pharmaceutical Chemistry, Jalpaiguri 735101, W. B, India

Abstract

Kolakhar is a locally prepared herbal soda of Assam, which is mainly used as a food additive. There are two main enzymes alpha-glucosidase and alpha-amylase, playing a major role for carbohydrate digestion. After inhibiting these two enzymes, the post prandial glucose level will be reduced. To manage of blood glucose level, these approaches may be adopted. The aim of the present study was to investigate the invitro *anti diabetic* activity of traditionally prepared kolakhar. The result suggests that due to the presence of biological compounds, the concentrated *kolakhar* product showed medicinal value like anti diabetic activity. The concentrated product of kolakhar exhibits the dose-dependent increase in inhibitory effect on alpha-glucosidase (up to 86.4%) and alpha-amylase enzyme (up to 91.7%). Above study proves that *kolakhar* having the *in vitro* anti diabetic activity. After proper scientific investigation on traditional *khar* of Assam, new finding may be come out.

Keywords: *Kolakhar*, Assam, diabetes, alpha-glucosidase, alpha-amylase enzyme.

GCMS ANALYSIS, DETERMINATION OF TOTAL PHENOLICS, FLAVONOID CONTENT AND FREE RADICAL SCAVENGING OF ETHYL ACETATE EXTRACT OF BARKS OF *PUTRANJIVA ROXBURGHII* WALL (EUPHORBIACEAE)

Kedar Kalyani A.*[a], Chaudhari Sanjay R. [B], Rao Srinivasa A. [c]

[a] P. E. Society's Modern College of Pharmacy, Nigdi, pune Maharashtra 411044 and Jawaharlal Nehru Technological University (JNTU), Hyderabad, Andra Pradesh, India 500072 [b] Amrutvahini College of Pharmacy Amrutnagar, Sangamner SK, Tal-Sangamner, Dist Ahmednagar 422608. [c] Bhaskar Pharmacy College, Amdapur X Road, Moinabad, Ranga Reddy, Andhra Pradesh
Email: kk_pharma20@rediffmail.com

Abstract

The study was undertaken to investigate the phytochemical constituents present in the trunk bark of *Putranjiva roxburghii* Wall by thin layer chromatography, GCMS, estimate total phenolics, flavonoids and to evaluate antioxidant potential of *Putranjiva roxburghii* Wall (Euphorbiaceae). The dried powered bark of *Putranjiva roxburghii* Wall (100 gm) were extracted by soxhlet with various solvents of increasing polarity such as pet ether, ethanol, ethyl acetate etc. All the prepared extracts were analysed by preliminary chemical test and further ethyl acetate extract analysed by Thin layer chromatography, Gas chromatography mass spectrometry to indentify and characterised the chemical compounds present in ethyl acetate extracts. Folin-ciocalteu reagent and Aluminium nitrate UV Spectrometric methods were used to estimate total phenolics and flavonoid contents of ethyl acetate bark extract. 1,1 diphenyl-2 picrylhydrazyl, Nitric oxide activity were used to determine in-vitro antioxidant activity. Phytochemical analysis of ethyl acetate extracts showed presence of major class of phytoconstituents. Gas Chromatography Mass Spectrometry results reveals presence of 15 phytoconstituents in ethyl acetate extract. More phenolic content and significant in-vitro antioxidant activity comparable with the standard ascorbic acid was observed for Ethyl acetate extract of bark of *Putranjiva roxburghii* Wall. In conclusion, result of this study show that the barks of *Putranjiva roxburghii* Wall are rich source of steroidal and triterpenoids compounds that can play an important role in preventing many diseases.

Keywords: *Putranjiva roxburghii* Wall, GCMS analysis, total phenolics, flavonoid contents, *in-vitro* antioxidant activity

OPTIMIZATION AND DEVELOPMENT OF GALLIC ACID ETHOSOMES USING TWEEN 80 AS PERMEATION ENHANCER

Anju Dhiman, Manju Deolia

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

Abstract

The purpose of the present study was to formulate gallic acid ethosomes for controlled drug release using tween 80 as edge activator. Gallic acid ethosomes were formulated by hot method and optimized using 2^3 factorial design by design expert software (version 8.0). The entrapment efficiency of optimized ethosomes prepared using phospholipid concentration of 638.75 mg at 47.50 °C for 17.5 min was found to be maximum i.e. 97.79%. Lipid vesicular system of gallic acid exhibited a negative zeta potential of-12.7 mV indicating a good degree of stability for gallic acid ethosomes. *In vitro* drug permeation studies of pure gallic acid and gallic acid ethosomes on pig ear skin suggested that gallic acid ethosomes showed 18.55% gallic acid permeation rate at the end of 300 min. However, pure gallic acid showed only 2.9% rate of permeation at the end of 300 min. This suggests that gallic acid ethosomes were better able to facilitate permeation of gallic acid deeply into the pig ear skin when compared with pure gallic acid. Gallic acid ethosomal formulation has tremendous potential to serve as a topical drug delivery system due to its enhanced rate of permeation and better stability.

Keywords: Gallic acid, ethosomes, tween 80, transdermal drug delivery.

COMPUTATIONAL ANALYSIS OF INTERACTIONS BETWEEN ANTI-EPILEPTIC DRUGS AND IMPORTANT PLACENTAL PROTEINS-A POSSIBLE ROUTE FOR NEURAL TUBE DEFECTS IN HUMANS

Hariarchana, Arvind Agrawal, S. Vijayasri*, Waheeta Hopper

Department of Bioinformatics, Faculty of Engineering & Technology, Kattankulathur, SRM University, Tamil Nadu, India
***Email: vijayasri.s@ktr.srmuniv.ac.in**

Abstract

Neural Tube Defects (NTDs) are a group of malformations that include but are not limited to Spina Bifida and Anencephaly, occurring during the Embryo developmental stage. Anti-Epileptic Drugs (AEDs) are the main forms of treatment for people with Epilepsy. Epileptic women are advised to continue taking AEDs even during pregnancy. Some of the AEDs have serious side effects like NTD. Epileptic women are advised to take folic acid (FA) supplements during their pregnancy to avoid NTD. But the relationship between FA intake and NTD is not yet established. Folate receptors play a critical role in mediating placental transport of maternal folate to the foetus. Another important protein is Carnitine O-acetyltransferase that is involved in the transport of Carnitine which is much needed for foetal metabolic functions and tissue development. Based on these facts, these two receptors have been considered for our study. A generic algorithm based docking tool was used to identify and study the interactions between the drugs and placental proteins. For comparison purpose, the natural ligands of these receptors have also been included in the dataset containing AEDs. The results exhibited the non-bonded interactions between AEDs and the crucial residues of these proteins. The drugs formed complex with these proteins with satisfactory binding energy. We suggest that these drug-protein associations could be the possible portal by which Anti-Epileptic Drugs induce Neural Tube Defects in foetus.

Keywords: Neural tube defect, anti-epileptic drug, placenta, folate transporters, docking, carnitine o-acetyl transferase.

THE PHYSICAL STABILITY OF LOTION OPTIMUM FORMULA FROM PARTITION PRODUCT OF LEAF PHALERIA MACROCARPA AND SUN PROTECTING FACTOR DETERMINATION USING SPECTROPHOTOMETRY

Abdul Karim Zulkarnain[a*], Marchaban[a], Subagus Wahyuono[b], Ratna Asmah Susidarti[c], Varaporn B. Junyaprasert[d]

[a]Department of Pharmaceutics, [b]Department of Biology Pharmacy, and [c]Department of Pharmacy Chemistry, Faculty of Pharmacy, Gadjah Mada University, Yogyakarta, Indonesia, [d]Pharmacy Department, Faculty of Pharmacy, Mahidol University Thailand

[*]Email: akarimzk08@yahoo.com

Abstract

Phaleriamacrocarpa containing phalerin and has activity as a sunscreen. Optimum formula of lotion oil in water (o/w) and water in oil (w/o) obtained by the method Simplex Lattice Design (LSD) using Design Expert® software version 9.0.1 with variations cetyl alcohol, stearic acid, and triethanolamine, so lotion w/o werecera alba, span 80 and cetyl alcohol. The purpose of this study was to determine the physical stability and security lotion optimization results *in vivo*. Lotions o/w and w/o made 13 formula and tested physical properties. The data used for the determination of the physical properties of the optimum formula. Differences in the physical properties of the optimum formula experiment with predictions defined by t test, level of 95 %. The best formula tested physical stability and SPF value using spectrophotometry. The results showed that the optimum formula lotion o/w werecetyl alcohol of 2.0 %; 6.0 % stearic acid; and triethanolamine by 2.0 %, while the lotion w/o werecera alba of 12.7 %; span 80 by 7.3 %; and cetyl alcohol by 2.0 %. T-test results were not significantly different between the responses of the physical properties of the experimental results with the predictions of the software. The viscosity, dispersive power, adhesion, separation volume ratio lotion o/w, relatively stable while all lotions were less stable during storage extreme temperatures. The SPF value of lotions o/w from partition product of *Phaleriamacrocarpa,* phalerin and benzophenone were 22.13; 32.49 and 42.45. The lotion w/o having SPF value: 21.59, 31.95 and 41, 87 respectively. The optimum formula of lotion was no primary irritant on the rabbit skin.

Keywords: *Phaleriamacrocarpa*, phalerin, lotions, stability, SPF.

EFFECT OF KAOLIN ON OCULAR PERMEATION OF DEXAMETHASONE FROM HPMC MATRIX FILM

Arunima Pramanik, Subrata Mallick

Department of Pharmaceutics, School of Pharmaceutical Sciences, Siksha 'O' Anusandhan University, Kalinganagar, Bhubaneswar-751003, Orissa, India

Abstract

The treatment of ocular diseases using eye drops and oral drugs is usually not sufficiently effective due to the natural barriers to drug penetration and nasolacrimal drainage. In this study ocular HPMC matrix film of dexamethasone containing kaolin of different ratios was prepared by solvent casting method. All films having similar thickness showed a minimum value of opacity which confirmed the transparency of films. Moisture content and uptake was increased with increasing kaolin amount and for matrices made from higher viscosity HPMC. FTIR spectra showed that hydrogen bonding may be responsible for dexamethasone adsorption on kaolin. Disappearance of the sharp endothermic melting peak of dexamethasone in the DSC thermogram confirmed amorphization of drug in the film matrices. Scanning electron microscopy showed the nanocrytals of kaolin in polymer dispersion and transformation of drug crystal into nano wire form. The wire size and thickness of drug was decreased for HPMC K15M matrices. Swelling capacity was increased with increasing the amount of kaolin content in the films. *In vitro* release of drug of all formulations revealed an initial burst effect followed by sustained release up to 6 h due to the presence of kaolin. The increased amount of kaolin-drug ratio(1: 4, 2: 4, 3: 4 and 4: 4) in the film sustained the release of drug from 54 to 39 % in 15 min, whereas, 47 to 20 % in 60 min and 84 to 44 % in 360 min in ocular permeation. *Ex vivo* permeation was majorly controlled by diffusion controlled mechanism. All the films were stable after 5 w of stability study, confirmed by FTIR, DSC and ex vivo permeation study.

Keywords: Kaolin, HPMC, Ocular permeation

SCREENING AND CHARACTERIZATION OF CHITINASE FOR BIOMEDICAL APPLICATIONS FROM MARINE WASTES

S. Krithika, C. Chellaram*

Satyabama University, Chennai, Tamilnadu, India, Vel tech university, Avadi, Chennai-62, Tamilnadu, India
***Email: chellaramvtmt@gmail.com**

Abstract

Aim of this research deals with the characterization and production of chitinase from marine waste and its deposited soil from the sea shore areas in Chennai. The soil samples were processed by serial dilution technique and fourteen morphologically different microorganisms were isolated and were screened for its chitinolytic activity in colloidal chitin media contained plate based on zone formation assay method. The biochemical tests were performed for all the isolates to prove its validity. The results obtained through biochemical tests showed that from fourteen different isolated strains all the isolates were determined as gram negative, in citrate utilization tests thirteen strains shows negative results, one as positive were in VP tests thirteen of the strains showed negative and one as positive. Thus all the isolates are potent producers of chitinase and the marine wastes can be utilized to generate a high–value-added product. In conclusion, the isolates exhibited prompting activity hence the active principle could be evaluated as effective pharmacological drugs in anticancer and antibacterial properties.

Keywords: Marine wastes, chitinase, bioactive drug, anticancer agent, antibacterial agent.

ANTIOXIDANT POTENTIAL OF COLLOIDAL FORMULATIONS CONTAINING CATECHINS AND EPIGALLOCATECHIN GALLATE

Bharti Sapra*, Anoopinder Kaur, Purva Thatai

Dept. of Pharmaceutical Sciences and Drug Research, Punjabi University, Patiala, Punjab, India
Email: bhartijatin2000@yahoo.co.in

Abstract

Skin damages induced due to UV irradiation may lead to skin lesions and photo aging of skin. It involves increased level of free radicals as well as inflammation. In this regard catechins, epigallocatechins and epigallocatechin gallate have the potential to be a natural remedy as it exhibits antioxidant activity. In the present study, microparticulate system containing epigallocatechin gallate and herbal extract containing the same was applied on rat dorsal skin after exposure to UV radiation (rate of exposure = 9.71 J/cm2, dose = 0.9011 mJ/cm^2/sec). The effect of formulation was evaluated in terms of reduced glutathione level, radical scavenging activity, and transepidermal water loss, irritation potential and histological changes.

Keywords: Catechins, epigallocatechin gallate, antioxidant, photoprotective.

DUAL STIMULI RESPONSIVE COPOLYMERIC NETWORK FOR ORAL INSULIN DELIVERY

Lomas Tomar[1], Charu Tyagi[1], Yahya E. Choonara[1], Viness Pillay[1*]

[1]Wits Advanced Drug Delivery Platform Research Unit, Department of Pharmacy and Pharmacology, School of Therapeutic Sciences, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, 7 York Road, Parktown 2193, Johannesburg, Gauteng, South Africa
Email: lomaskumar.tomar@wits.ac.za

Abstract

Stimuli-responsive polymeric biomaterials are under extensive research for their use as a carrier for oral drug delivery systems. The aim of this study was to synthesise and characterize a dual-sensitive co-polymeric biomaterial responsive to temperature and pH as both of these stimuli are important physiological parameters. Copolymer of poly(NIPAM)-co-acrylic-co-methacrylic acid were synthesized by using free radical polymerisation method using different concentrations of fed monomers. Synthesized copolymers were characterized by FTIR, DSC, Texture analysis and Karl Fischer titration. These systems were further evaluated for their swelling efficacy and *in vitro* drug release under the influence of different temperature and pH environment. FTIR spectrum confirmed the synthesis of the copolymer and thermal analysis using DSC proved that the copolymer was stable at high temperature. Results of the swelling studies showed an increased swelling at 37 °C and pH 7.4. The insulin release studies at various temperature and pH over 180 min recorded highest release at 37 °C: up to 78 % at pH 7.4 and up to 30 % at pH 1.2, while a comparatively lower release was observed at 4 °C: up to 28 % at pH 7.4 and up to 17 % at pH 1.2. The properties of the synthesized copolymer and there *in vitro* insulin release behaviour prove its potential as a material for oral delivery of therapeutic peptides.

Keywords: Copolymer, insulin delivery, stimuli responsive polymers.

EFFECT OF SURFACE MODIFICATION ON PROTEIN ADSORPTION AND BIOCOMPATIBILITY OF PLGA NANOPARTICLE

Priyanka Jain

Research Scholar, Dept of Pharmaceutics, VNS Faculty of Pharmacy, Bhopal, M. P., India

Abstract

Upon introduction into physiological environments, nanomaterials readily associate proteins forming a protein corona (PC) on their surface. This PC influences the nanomaterial's surface characteristics and impacts their interaction with cells. Surface modification of nanomaterial may influence its biocompatibility and biofate of nanoparticles. In this study we prepared PLGA nanoparticles and modified their surface property by the coating of cationic (chitosan) and anionic (alginate) polymer. The coated and uncoated particles were subjected to protein adsorption studies in BSA solution. Further the effect of surface modification on haemo compatibility, cytotoxicity and cell uptake was studied. Our study shows that there is significant change in protein adsorption among particles with different physical properties as a result of coating the particles with different polymers like chitosan and alginate. Change in size and zeta potential resulted in differential protein adsorption. This may be due to the electrostatic interactions between the negatively charged BSA and the positively charged particle surface. Pristine PLGA particles and their surface coated counterparts were hemo compatible as evident from our results. Similar results were obtained when the particles were tested for cytotoxicity in Caco 2 cell lines. However, there was significant change in macrophage uptake by different surface coated particles as compared to plain PLGA particles. Differential adsorption of protein by different coated and uncoated particles in serum may result in different biological effect. We demonstrated that enhanced adsorption of protein on different nanoparticles resulted in enhanced macrophage uptake but showed no effect on haemo compatibility. Long circulating carriers should be prevented from macrophage clearance to increase the circulating half life of particles. Protein adsorption study may help to predict the biocompatibility and *in vivo* consequences of nanoparticles.

Keywords: Nanoparticles, biocompatibility, chitosan.

MOLECULAR COMPLEX (ES) CONTAINING TAILORED HYBRID NANOARCHITECTURES FOR SITE SPECIFIC DRUG DELIVERY

Udita Agrawal[a], Ajit Kumar Saxena[b], S. P. Vyas[c]

[a] Sagar Institute of Research and Technology, Bhopal, India, [b]Cancer Pharmacology Division, Indian Institute of Integrative Medicine, Jammu, India, 180001, [c] Drug Delivery Research Laboratory, Department of Pharmaceutical Sciences, Dr. Hari Singh Gour University, Sagar, M. P., India, 470003
Email: uditaagrawal.pharma@gmail.com

Abstract

The object of the present study was to investigate the glioma targeting propensity of folic acid (F) decorated polymer lipid hybrid nano particles (PLNs) encapsulating cyclo-[Arg-Gly-Asp-D-Phe-Lys] (cRGDfK) modified paclitaxel (PtxR-FPLNs). The prepared PLNs were supposed to bypass the blood brain barrier (BBB) efficiently and subsequently target integrin rich glioma cells. The developed formulations were characterized by fourier-transform infrared spectroscopy, nuclear magnetic resonance spectroscopy, particle size, drug entrapment efficiency, *in vitro* release profile, transmission electron microscopy and atomic force microscopy. PtxR-PLNs-FA demonstrated highest *in vitro* inhibitory effect, cell apoptosis, cell uptake and significant transport ability across the BBB model *in vitro*. Pharmacokinetic and bio distribution studies demonstrated that the PtxR-PLNs-FA significantly enhanced the bioavailability of Ptx in circulation as well as in brain tumor. *In vivo* anti-tumor studies clearly revealed that the median survival time for Balb/C mice treated with PtxR-PLNs-FA (42 d) was extended significantly as compared to other formulations. From the results it can be concluded that the developed dual targeted nano formulation has ability to cross BBB and significantly deliver higher amount of drug to brain tumor for better therapeutic outcome.

Keywords: Molecular complex, lipid hybrid nanoparticles, nanoformulation.

CYCLIC NGR PEPTIDE FUNCTIONALIZED POLYMERIC NANOPARTICLES AS DUAL-TARGETING CARRIER FOR SITE SPECIFIC ANTITUMOR DRUG DELIVERY

Madhu Gupta[a,b]*, S. P. Vyas[a]

[a]Department of Pharmaceutical Sciences Dr. H. S. Gour University Sagar, M. P., India, [b]Shri Rawatpura Sarkar Institute of Pharmacy, Datia, M. P.
Email: madhugupta98@gmail.com

Abstract

Some specific type of tumor cells and tumor endothelial cells represented CD13 proteins and act as receptor for NGR motifs containing peptide. These CD13 receptors can be specifically recognized and bind through the specific sequence of cyclic NGR (cNGR) peptide and presented more affinity and specificity towards them. The cNGR peptide was conjugated to the PEG terminal end in PLGA-PEG block copolymer. Then, the ligand conjugated nanoparticles (cNGR-DNB-NPs) encapsulating docetaxel (DTX) was synthesized from preformed block copolymer by emulsion/solvent evaporation method and characterized for different parameters. The various studies such as *invitro* cytotoxicity, cell apoptosis and cell cycle analysis presented the enhanced therapeutic potential of cNGR-DNBNPs. The higher cellular uptake was also found in cNGR peptide anchored NPs into HUVEC and HT-1080 cells. However, free cNGR could inhibit receptor mediated intracellular uptake of NPs into either types of cells at 37 °C and 4 °C temperature, revealing the involvement of receptor-mediated endocytosis. The *in-vivo* bio distribution and anti-tumor efficacy studies indicated that targeted NPs have higher therapeutic efficacy through targeting the tumor specific site. Therefore, the study exhibited that cNGR-functionalized PEG-PLGA-NPs could be a promising approach for therapeutic application to efficient antitumor drug delivery.

Keywords: Cyclic NGR, CD13 receptor, nanoparticles, solid tumor, docetaxel.

SEPARATION OF BIO-WASTE SLURRY FOR DIFFERENT BY-PRODUCTS USING PHARMACEUTICAL AND AGRICULTURAL INDUSTRIES

B. Arvind Kumar[1], C. Chellaram[2,3]*

[1]Ph. D Scholar, Dept. of Biotechnology, Sathyabhama University, Chennai 100119. TN, [2]Dept. of Biomedical Engineering, Vel Tech Multitech. College, Chennai 600602. TN, [3]Vel Tech University, Avadi. Chenna, 600062 TN. India

***Email: chellaramvtmt@gmail.com**

Abstract

Objective of this research is to reduce the bio-waste by-product for pharmaceutical and agriculture industries. Here used sludge digester system in the final stage to recover the maximum effluent from the sludge. Sludge have been separated by gravity separation process, were supernatant effluent will be removed through the gravity flow and septic will be avoided by supply of air to the digester reactor. The end slurry will be transferred to the thickener bed for strengthen the thickness of the sludge. By-product sludge production was quantified by inlet BOD and COD. Based on the quantity estimation of the production, aerobic sludge digester and sludge thickener bed was designed. From the designed sludge digester and sludge thickener bed the quantity of slurry production was estimated and analyzed. From the slurry, the effluent and sludge was separated and the volume of separation was recorded. The by-product of the sludge was composed and used for Agriculture field. The by-product of the sludge could be used for the pharmaceutical industry in future.

Key words: BOD, COD, Bio-waste, Industrial application.

STUDY OF PHARMACY RETAIL BUSINESS WITH RESPECT TO THE EMOTIONAL INTELLIGENCE OF THE RETAILER

Amar Damle

Asst Prof. Dept of Psychology, Smt Binzani Mahila Mahavidyalaya, Mahal, Nagpur, 440032 (MS, India)
Email: amardamle0@gmail.com

Abstract

Pharmaceutical Retailing is the most upcoming business in India. After agriculture the Indian retail industry is the largest employer. It is estimated to grow from US $ 435 billion in 2010 to US $ 587 billion by 2015. The entry of the organized players is changing the face of the pharmacy business, which today is highly fragmented. Although the retail stores too has been posting high growth rates. There is a need of change in the attitudes of the pharmacy retailers. With stringent FDA regulations, and increasing numbers of pharmacy shops, highly competitive organized retail stores, generic drug stores started by the NGO's, and increased range of products, the pharmacist today is finding it difficult to survive. This research study was carried out to understand the correlation of Emotional Intelligence (which is one of the major variables that will surely impact the overall business and the number of customers being retained by the pharmacist. Result of the study shows a strong positive correlation between the number of customers retained by the pharmacists for a period of one year or more, and the levels of Emotional Intelligence (N=50, df=48, r =+0.68) which is significant at 0.01 levels indicating the strong positive correlation has not come by chance. Also it was confirmed from the study that the amount of business generated per day, will also depend on the EI of the individual who manages his customers well. A positive relationship exist between the average daily business, and the levels of EI (N=50, df=48, r =+0.354). In fact this is just a pilot study, and further research should be carried out with respect to levels of social intelligence as suggested by Daniel Goleman.

Keywords: Retail business, FDA regulation, relationship.

STUDY OF VERO CELL LINE PROTEIN UNDER STRESS CONDITION

Priyadarshini[1*], Kanika Jain[1], Rajeev Sood[2]

[1] Jaypee Institute of Information Technology, Noida, [2] Ram Manohar Lohia Hospital & PGIMER, New Delhi
***Email: priya.juit@gmail.com**

Abstract

Proteins are important component of cells which are involved in various cellular functions. Different kind of stressing conditions have different responses in the components of the protein synthesis system. Supersaturation condition in kidney environment led to crystallization process. Crystals thus form injure the surrounding cells and result in reactive oxygen species (ROS) formation. There might be some changes in the protein synthesis when the kidney cells enter in oxidative stress. In the present study, kidney cell lines were exposed to oxidative stress and their proteins were analyzed using Bradford analysis and SDS-PAGE. Vero cells were obtained from NCCS Pune and cultured in DMEM (Dulbecco's Modified Eagle's Medium) and maintained in a humidified incubator at 37 °C with 5% CO_2. Calcium phosphate (CaP) crystals were prepared by homogenous system. After FTIR analysis crystals were used to injure Vero cell line. H_2O_2 was also used to injure the Vero cells. Intra cellular protein was extracted from healthy cells and injured cells (with CaP crystals and H_2O_2). Ammonium sulphate precipitation method was used for the isolation of extracellular protein from the media of healthy and injured cells. Bradford method was used for the quantitative estimation of protein. Extracted proteins were analyzed by SDS-PAGE. Amount of intracellular and extracellular protein of normal cells was 4.84±0.004µg/ml. Intracellular protein of CaP injured and H_2O_2 injured cells was 10.59±0.003 µg/ml and 10.78±0.011µg/ml respectively. While extracellular protein of injured cells was nearly 4 µg/ml. Intracellular protein bands ranging from 14.3 to 97.4 k Da was observed in healthy cells. Protein bands of ~40kDa and ~20kDa was absent in H_2O_2 and CaP injured intracellular protein extract. Two extracellular protein bands of 66kDa and ~60kDa were present in injured cells and healthy cells. In conclusion, when exposed to oxidative stress several proteins are oxidized decreasing the activity of many metabolic pathways. In the present study, amount of intracellular protein increased when cells injureed with CaP or H_2O_2. While extracellular protein remains more or less same in both healthy and injured condition of cells. In SDS-PAGE analysis few bands were missing in intracellular extract of injured cells. These results indicate that the amount of protein varies when cells are injured with CaP and H_2O_2.

Keywords: Oxidative stress, kidney, protein, calcium phosphate, crystal.

DOCKING AND DEVELOPMENT OF HIGHLY PREDICTIVE 3D-QSAR KNN-MFA MODELS FOR NITROIMIDAZOLE DERIVATIVES AS NON NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS AS ANTI-HIV AGENTS

Ziyaul-Haque[a]*, Shaikh Anwar rafique[b], Patil Sushil[b], Zameer Shaikh[c]

[a]Department of Pharmaceutical Chemistry, Ali Allana College of Pharmacy Akkalkuwa 425515, India, [b]Department of Pharmaceutical Chemistry, MET's Institute of Pharmacy Nashik, 422003, India, [c]Department of Pharmaceutical Chemistry, H. R Patel College of Pharmacy Nashik, 425421 India
Email: Royalziya90@gmail.com

Abstract

Objective of study was to develop new anti-HIV agents using 2D/3D QSAR analysis. The 3D QSAR study was performed using k-nearest neighbor molecular field analysis (kNN-MFA) approach for electrostatic, steric and hydrophobic fields. The 2D QSAR analysis was performed with MLR technique. 2D and 3D QSAR analyses were performed on recently synthesized Nitro imidazole (20 compounds) derivatives for their anti-HIV activities on ROD and on III_B strains. The statistically significant 2D-QSAR models for III_B strains are r^2 = 0.8848 and q^2 = 0.7708 and on ROD strains giving r^2 = 0.9712 and q^2 =0.9375. 3D QSAR study was performed using k-nearest neighbor molecular field analysis (kNN-MFA) approach for electrostatic, steric and hydrophobic fields. Internal (q^2 = 0.8460) and external (predictive r^2 = 0.63) validation criteria. 2D QSAR studies revealed that T_O_S_3 descriptors were major contributing descriptor in case of IIIB and T_T_Cl_7 in case of ROD. The overall degree of prediction was found to be around 40% in case of IIIB and in ROD it is around 59 %. The 3D QSAR was performed using kNN-MFA method. The overall degree of prediction was found to be around 63 % and 52 % respectively by using kNN-MFA method. 3D QSAR results suggested the importance of some molecular characteristics, which should significantly affect the binding affinities of compounds. And by using these data the newer molecules were designed. The docking studies of all newly designed molecules were performed using GRIP based Batch docking by using specific receptor.

Keywords: Nitro imidazole, QSAR, kNN-MFA, GRIP.

STABILITY INDICATING HPLC-MS/UV METHOD FOR DETERMINATION OF RACECADOTRIL FROM BULK AND FORMULATION

Vrushali Tambe[a,b]*, Meenakshi Deodhar[a,c], Vijayalakshmi Prakya[a,d]

[a]Jawaharlal Nehru Technological University, Hyderabad, India, * PhD Research Scholar, [b] PES Modern College of Pharmacy (For Ladies), Pune, Maharsahtra, India. [c] S. G. R. S. College of Pharmacy, Pune, Maharashtra, India, [d] Siddhartha Institute of Pharmacy, Hyderabad, India
Email: vrushalitambe99@gmail.com

Abstract

The present work was focused on development of rapid, specific and novel stability indicating high performance liquid chromatographic method for determination of racecadotril in bulk and capsule formulation. The drug and formulation was subjected to hydrolysis (acidic, alkaline and neutral), oxidative, photolytic and thermal stress, as per ICH guidelines Q1A (R2). The degradation products of racecadotril formed under various stress conditions were acceptably separated using a mobile phase containing acetonitrile and water (60:40 v/v) with 0.5% formic acid. Quantification was performed using RP C18 column with the detection wavelength of 230 nm. The method was found to be linear in the concentration range of 5-100 µg/ml for racecadotril. Limit of detection and quantitation was found to be 0.15–0.45 µg mL−1. The identification of major stressed degradation products was performed using qudrapole electro spray ionization mass spectroscopy (LC/ESI-MS) in positive mode. Racecadotril was found to be very unstable under basic condition and is converted into 2-(3-(acetylthio)-2-benzylpropanamido) acetic acid and 2-benzyl-N-(2-hydroxyvinyl) acrylamide. The drug is more stable at neutral pH as compared to acidic and oxidative stress. Under acidic conditions, benzyl 2-(2-benzyl-3-mercaptopropanamido) acetate is the probable degradation product.

Keywords: LC-MS, stability, fragmentation.

STUDY ON HEALTH RELATED QUALITY OF LIFE IN HYPERTENSIVE PATIENTS THROUGH MODIFIED QUESTIONNAIRE–A PROSPECTIVE EVALUATION IN A TERTIARY CARE SETUP

Anudeep B, Sahithi M, Sandhya N, Manasa A*

Department of Clinical Pharmacy, St. Peter's Institute of Pharmaceutical Sciences, Hanumkonda 506001, Telangana, India
***Email: venkipharmd@gmail.com**

Abstract

Hypertension is a traditional risk factor for cardiovascular disease. Cardiovascular diseases caused 2.3 million deaths in India in the year 1990; this is expected to double by the year 2020. Hypertension is directly responsible for 57 % of all stroke deaths and 24 % of all coronary heart disease deaths in India. HRQOL is an important emergent outcome in Hypertensive studies. A prospective study was carried out at super specialty hospital for a period of 6 mo. The study enrolled 190 in-patients and out-patients who met inclusion criteria. Modified questionnaire includes domains like physical functioning, bodily pain, general health, general well being, vitality, social functioning and mental health. Patient counseling was provided to the patients for improving their life style modifications. HRQOL of the hypertensive patients was found to be affected in 55.78 % in their physical functioning. 87 % reported bodily pains, 62.61 % fell sick in general health, decreased general well being found in 83.15 %, decreased vitality reported in 41.04 %, reduced social functioning in 30.52 %, mental health affected in 74.21 %. Factors affected are BMI (17.88 % BMI>normal), physical exercise (56.31 % without any physical exercise), diet (92.11 % high salt intake), stress found in 89.46 %, medication non-adherence (26.84 %), unawareness of complications (37.36 %) in hypertensive patients. Domains of HRQOL of the hypertensive patients were found to be affected and were observed that Hypertensive patients presenting different factors contribute to be a risk factor for Hypertension, which may lead to complications and further deteriorate their Health related Quality of Life. The necessity of patient counseling by a clinical pharmacist plays a major role and educational interventions on healthy life styles may play an essential part in the prevention of high blood pressure and fatal cardiovascular events.

Keywords: Hypertensive patient, quality of life, prospective study.

COMPARATIVE STUDY OF SAFETY, EFFICACY AND QUALITY OF LIFE AFTER GEMCITABINE AND CISPLATIN IN CONCURRENT CHEMORADIOTHERAPY IN PATIENTS WITH SQUAMOUS CELL CARCINOMA OF CERVIX

Anudeep B, Sangram V*

Department of Clinical Pharmacy, St. Peter's Institute of Pharmaceutical Sciences, Hanamkonda, Warangal-506001, India

Abstract

A randomized study was conducted at Cancer Hospital, to compare gemcitabine with cisplatin in concurrent chemotherapy (CT) in patients with squamous cell carcinoma (SCC) of cervix. Response rate was chosen as the primary end point of the comparison and toxicity, quality of life (QoL) was taken as a secondary end point. A total of 50 patients with SCC of cervix were randomized to receive radiotherapy (RT) for 5 d and gemcitabine 150 mg/m^2 intravenously (IV) or cisplatin 40 mg/m^2 IV on day 6 and day 7 were free of medication. The response study was conducted on 30 patients, 15 patients in each arm. Hematological, non-hematological and biochemical toxicity studies were conducted on 50 patients, 25 patients in each arm. Thirty patients were included in the QoL study. Out of 15 patients in arm-A, complete response was shown by 6(40 %) patients (gemcitabine-RT) compared to 4 (26.7 %) patients in arm-B (cisplatin-RT). Equal number of patients, 8(53.3 %) each in both the arms showed partial response. No patient showed stable disease in both the arms. The disease progressed more in arm-B, 3(20 %) patients than in arm-A, 1(6.7 %) patient. In Arm-A, all 15 patients showed relief from blood and white discharge after the 3rd and 4thcycles of CT, respectively, while in Arm-B patients this relief was observed after 4th and 5th cycles of CT. Grade-3 and Grade-4 hematological toxicities were more pronounced in Arm-B in comparison to Arm-A. Six (26.08 %) patients out of 24 patients showed Grade-3 anemia (p=0.009) in Arm-B compared to none in Arm-A. Grade-4 and Grade-2 anaemia also was more pronounced in Arm-B. There was no significant difference in the occurrence of leucopenia, neutropenia and thrombocytopenia between the two arms. Grade-3 nausea/vomiting (p=0.015) was more pronounced in Arm-B, 9(39.13 %) patients in comparison to 2(8.33 %) patients in Arm-A. Grade-2 diarrhoea (p=0.030) was higher in case of Arm-B, 8(34.78 %) vs. 2(8.33 %) in Arm-A. Grade-1 alopecia was more pronounced in Arm-B in comparison to Arm-A, 9(39.13 %) vs. 2(8.33 %) (p=0.015). Grade-2 alopecia also was more pronounced in Arm-B, 6(26.08 %) vs. 3(12.5 %). There was no significant difference in dermatitis. Seven (30.43 %) patients of Arm-B showed grade-2 creatinine toxicity (p=0.05) in comparison to 2(6.25 %) patients in Arm-A, which was significant. Both treatments enhanced global health status and physical functioning abilities of the patients as well as significantly reduced pain and fatigue. In comparison to Arm-B, Arm-A treatment had shown better QoL. In conclusion gemcitabine-RT provided a significantly higher response rate with delayed disease progression in comparison to cisplatin-RT. Hematological, non-hematological and biochemical toxicities were less in gemcitabine-RT regimen resulting in a better QoL.

Keywords: SCC of cervix, cisplatin-RT, gemcitabine-RT, QoL.

IXORA CHINENSIS LAMK. FLOWER EXTRACT ANTI AGING DRINKS USING ULTRASONICATION

Buavaroon Srichaikul

Faculty of Public Health, Department of Nutrition, Mahasarakham University, Thailand 44150
Email: buacanada@gmail.com

Abstract

Health Drinks currently are one of the most popular demands of consumption drink product in Thailand and all over the world. People are more concerned about their health and quality of health life in order to live longevity. This study aimed to evaluate the bioactivity quantities, toxicity, active ingredients, total phenolic contents, different of extraction method between Ultra sonication and maceration with 40 % and 50 % ethyl alcohol, the content of antioxidants of *Ixora chinensis Lamk.,* flower extract or commonly named Dauk Khem flower extract in order to develop anti-aging health drink products. We have investigated that many anti-aging health drink products in Thailand are developed under or sub-standard and do not meet the Thai FDA requirements in the area of toxicities and bioactivities. We investigated the extracted flower of *Ixora chinensis* Lamk*.,* Jack R. M. Smith with Ultra sonication and maceration with 40 % and 50 % ethyl alcohol and compared yields with different period of time and also analysis of antioxidant activities with DPPH, FRAP and ABTS methods, total phenolic compound, active ingredients by HPLC and acute toxicity analysis in white wistar rats by oral administrating of *Ixora chinensis* Lamk.*,* flower extract for 7 d. The result showed that there was no statistical significant different in abnormality between control group and experimental group of white wistar rats. It meant no signals of acute toxicity. We also found that *Ixora chinensis* Lamk*.,* flower extract consisted of high contents of caffeoyl quinic acid, chlorogenic acid, quercetin, iso-quercetin,rutin and cathechin (HPLC method).

Keywords: Ultra sonication extraction, phenolic content, flavonoids, acute toxicity, hematological value, Wistar white rats.

HPTLC DENSITOMETRIC EVALUATION BY SIMULTANEOUS ESTIMATION OF GALANGIN IN *ALPINIA GALANGA* AND *ALPINIA OFFICINARUM*

Ajay G. Namdeo* Vijaykumar M. Kale, K. R. Mahadik

Department of Pharmacognosy, Poona College of Pharmacy, Bharati Vidyapeeth Deemed University, Pune, Maharashtra, India
Email: agnamdeo@gmail.com

Abstract

The aim of the work is to develop a simple, rapid, selective and cost effective HPTLC method for the determination of galangin in *Alpinia galanga* & *Alpinia officinarum.* The HPTLC densitometric technique was therefore, selected for the quantitative and qualitative determination of galangin in *Alpinia galanga* and *Alpinia officinarum* respectively. There are different analytical methods were used to isolate constituents from *Alpinia galanga* and *Alpinia officinarum.* Literature survey reveals that no HPTLC method so far is reported for the determination of galangin in *Alpinia galangal & Alpinia officinarum.* The present study describes HPTLC method for the qualitative and quantitative estimation of galangin. Both the methods were found to be simple, precise, specific, reproducible, sensitive and accurate and can be used for the quantitation of galangin and routine quality control of raw materials and formulations containing galangin.

Keywords: *Alpinia galangal, Alpinia officinarum*, HPLC, HPTLC, galangin and 3-O-methyl galangin.

ANTICANCER PROPERTY OF *PHLOGACANTHUS THYRSIFLORUS* AGAINST HeLa AND MCF-7 CELLS

Khangembam Victoria Chanu[a,b*], Leishangthem Geetadevi[c], Sandeep Srivastava[c], Dimpal Thakuria[d], Meena Kataria[a]

[a]Division Of Biochemistry, Indian Veterinary Research Institute, Izatnagar, U. P.-243122, India, [b]Scientist, ICAR-National Institute of High Security Animal Diseases, Bhopal, M. P.-462022, India, [c]Department Of Pathology, AIIMS, Ansari Nagar, New Delhi–110029, India, [d]Directorate of Cold Water Fisheries Research, Bhimtal, Uttarakhand-263136, India
Email: drvictoriachanu@rediffmail.com

Abstract

Phlogacanthusthyrsiflorus, a vegetable common to north eastern states of India was analysed for its anticancer property. Methanolic extract of *P. thyrsiflorus* leaves was found to induced 50 % cell death in HeLa and MCF-7 cells by a concentration of 0.070 and 0.095 mg/ml respectively. Fluorescent staining of the extract treated cells with Hoechst S769121 revealed characteristic fragmented condensed nuclei or apoptotic bodies whereas round greenish yellow nucleus were observed in the control untreated cells. The type of cell death induced by the extracts using half of the IC_{50} was analysed by fluorescent activated cell sorter using Annexin V-FITC and PI. It was found that the cells were undergoing both apoptosis and necrosis as indicated by the dye uptake. Control cells showed more than 90% viability after 24 hr of incubation. HeLa cells incubated with the extract showed 5.9 %, 7.63 % and 11.8 % early apoptotic, late apoptotic and necrotic cells. MCF-7 cells incubated with the extract for 24 hr showed 9.74% early apoptosis followed by 7.65 % late apoptosis and 6.38 % necrosis. The extract was also found to induce oligonucleosomal DNA fragmentation, a biochemical hallmark of apoptosis as observed in conventional gel electrophoresis. Apoptosis induced by the extract was further confirmed in immunocytochemistry by detection of Caspase-3, a key enzyme of both the pathways of apoptosis using polyclonal anticaspase-3 antibody. The findings of the present work indicate that *P. thyrsiflorus* leaves may prove to be a natural source of potent anticancer agent.

Keywords: *Phlogacanthusthyrsiflorus*, methanolic extract, anticancer, apoptosis.

PHARMACOGNOSTIC, PHYTOCHEMICAL AND ANTIBACTERIAL EVALUATION OF LEAVES OF *SPATHOLOBUS PARVIFLORUS* (ROXB EX DC) KUNTZE, A RARE ENDEMIC THREATENED WOODY CLIMBER OF SOUTH INDIA

Manju Madhavan

Department of Botany, Vimala College, Thrissur, India

Abstract

Spatholobus parviflorus is a rare endemic threatened climber. The leaf paste is used to treat conjunctivitis by the Kani Tribes. No pharmacognostic and phytochemical studies from this plant are reported. The present study attempts to evaluate the physicochemical constants, phytochemical analysis, fluorescence characteristics of leaf powder, ethanol and methanol extracts of this medicinally important plant. Histochemical tests were made to localize the presence of phenols on the fresh sections of the leaf with the reagents Ferric chloride, Potasium dichromate and Hoepfner-Vorsatz test. Total phenol was estimated in fresh leaf sample, dried powder, ethanol, methanol and distilled water extracts by using Bray and Thorpe method Antibacterial studies of the ethanol and methanol leaf extract were done by well diffusion method. Physicochemical parameters extractive values, ash content and fluorescent behavior of leaf powder were determined helping in the standardization of the plant. The histochemical procedures localized the presence of phenols in the leaf sections. The quantification of phenols showed that the ethanol extracts had the maximum phenol content in comparison to methanol, water, fresh and dry powder. Phenolic content was observed maximum in ethanol extract (3.9 mg/gm) and minimum in dried leave powder (0.86 mg). The antibacterial studies showed that ethanol extract had more activity than methanol extracts.

Keywords: Spatholobus parviflorus, phenol quantification, phytochemical studies, pharmacognosy.

GERANIOL: A POTENT ANTICANDIDAL AGENT

Yamini Sharma[2], Mohsin Maseet[2], Nikhat Manzoor[1,2]

[1]College of Applied Medical Sciences, Taibah University, Al-Madinah Al-Munawara, Kingdom of Saudi Arabia, [2]Medical Mycology Lab, Department of Biosciences, Jamia Millia Islamia, New Delhi-110025. India
Email: nikhatmanzoor@yahoo.co.in

Abstract

C. albicans is the causal agent for opportunistic oral and genital infections in immunocompromised patients. Increasing encounters with drug-resistant pathogenic fungi and toxicity of pre-existing antifungal drugs has emphasized the need for novel and more effective antifungal agents. Anti-fungal potential of geraniol, a monoterpenoid and a major constituent of geranium essential oil, was evaluated against *C. albicans* (ATCC 90028), a human fungal pathogen. It shows antifungal potential with low minimum inhibitory concentration (MIC) of 130µg/ml. Growth curve showed complete suppression of fungal growth at MIC while hemolysis assay showed that geraniol is non-toxic even at the concentrations approaching 5×MIC. WST-1cytotoxicity assay showed 90-95 % cell death in *C. albicans*. Geraniol reduced ergosterol levels in *C. albicans* by 50 %, at sub-MIC values of MIC/4. This natural compound caused 70 % inhibition in *Candida* biofilm development at its MIC value. This may be due to inhibition of fungal germ tube induction. Yeast to hyphal transition is significant in formation of biofilms and as a result is also responsible for the virulence and pathogenicity of this opportunistic fungus. Geraniol is a promising antifungal that acts on multiple target sites. It may be interfering with ergosterol biosynthesis and hence disrupting cell membrane integrity. It may also be having a significant impact on fungal morphogenesis and biofilm formation. Our results suggest that geraniol may be used in the management and treatment of both superficial and invasive *Candida* infections.

Keywords: *Candida*, WST-1-cytotoxicity assay, ergosterol biosynthesis, biofilm inhibition.

EFFICACY OF ANTIOXIDANT AND ANTI-INFLAMMATORY PROPERTIES OF LEAF EXTRACTS OF *BORRERIA HISPIDA*

Mrs. Chandrika Chandrika

Research scholar, Dept of Chemistry, Sathyabama University, Chennai 600049, Tamilnadu, India
Email: 83.chandrika@gmail.com

Abstract

Total content of phenol, terpenoid and flavonoids were quantified from leaf extract of *Borreria hispida* which was collected from Tamilnadu regions. There are five different solvents used for the extractions. The leaf extract was evaluated for antioxidant activities by 1, 1–diphenyl-2-picryl-hydrazyl (DPPH) radical scavenging assay. Among the five solvents, maximum antioxidant activity was found in the ethanolic extract (72.8 %). Total content of phenol, terpenoid and flavonoids were quantified as 33.21 mg Gallic acid equivalents, 76.4 mg/g and 18.32 mg QE/g respectively. *In vitro* anti-inflammatory activity was evaluated using albumin denaturation assay. The maximum albumin denaturation of *Borreria hispida* was found to be 89.3 % at a dose of 10 mg/ml. From the results, it was concluded that the percentage of antioxidant activity was found to be 72.8 % which attributes the maximum radical scavenging activity and the ethanol leaf extract of *Borreria hispida* was exhibited superior level of anti inflammatory activity.

Keyword: Antioxidant activity, anti-inflammatory activity, phenol, terpenoid and flavonoids contents.

ROTTLERIN PROTECTS AGAINST RENAL EPITHELIAL CELL INJURY BY INHIBITING PKC-DELTA TRANSLOCATION IN MALE WISTAR RATS

Nirlep Chhiber

Dept of Biochemistry, Punjab University, Chandigarh, Punjab, India
Email: nirlep22chhibber@gmail.com

Abstract

Calcium oxalate (CaOx) stones account for the vast majority of calculi in primary and secondary forms of hyperoxaluria. Although the underlying pathological mechanism of oxalate-induced calcui remain elusive but many authors augmented free radical production via activation of NADPH oxidase (in renal tubular cells), which is further mediated by protein kinase C (PKC-δ) signaling. Thus inhibition of PKC-δ might reduce oxalate induced consequences leading to CaOx stones formation. In the current study efficacy of rottlerin, a PKC-δ inhibitor was studied in hyperoxaluric conditions induced in male wistar rats by supplementing their drinking water with 0.4 % ethylene glycol and 1 % ammonium chloride for 9 d. Hyperoxaluric rats exhibited significantly increased oxalate levels and enormous crystalluria. In the hyperoxaluric rats, antioxidant defense was impaired [decreased activities of Catalase Superoxide dismutase and reduced glutathione pool and the rats showed increased activity of NADPH oxidase (424.74 %) as compared to normal rats. Selective inhibition of PKC-δ by rottlerin (1 mg/kg body weight, ip), led to decreased activity of NADPH oxidase (49.67 %) and hence decreased generation of oxidant species. Rottlerin (2 mg/kg body weight, ip) maintained the oxidant/antioxidant balance, reduced crystaluria and imparted significant mitochondrial protection to the renal cells, as evident by increased mitochondrial membrane potential as compared to the hyperoxaluric animals. Overall renal functioning and renal architecture was improved along with significant reduction in markers of oxidative stress in rottlerin treated rats. Taken together, these results support the involvement of PKC-δ in hyperoxaluria induced nephrocalcinosis in rats and rottlerin, being an inhibitor of PKC-δ and as an oxidant scavenger, improved the hyperoxaluric manifestations in rats.

Keywords: Calcium oxalate stone, renal stone, oxidative stress.

TRANSFEROSOMES AS HERBAL DRUG DELIVERY CARRIERS FOR IMPROVED DELIVERY

Dilip K. Tiwari*, Akshat Sharma, Dr. G. K. Saraogi

Lakshmi Narain College of Pharmacy, Kalchuri Nagar Raisen Road, Bhopal, (M. P.), 462021
Email: dilip21k@gmail.com

Abstract

Phytomedicines are used worldwide by human being from ancient times. However these medicines suffer from certain limitation such as toxicity, stability issues, poor bioavailability and patient compliance. To minimize these problems various novel drug delivery systems (NDDS) such as transfersomes, phytosomes, ethosomes, herbal transdermal patches, nanoparticles and biphasic emulsions are used nowadays. With use of these advance techniques protection from toxicity, enhancement in stability, improved bioavailability of herbal formulations, protections from physical and chemical degradation can be achieved. These techniques provide improved patient compliance, sustained release and targeted action of plant actives and extracts.

Transdermal route offers several potential advantages over conventional routes like avoidance of first pass metabolism, predictable and extended duration of activity, minimizing undesirable side effects, utility of short half-life drugs, improving physiological and pharmacological response, avoiding the fluctuation in drug levels, inter-and intra-patient variations, and most importantly, it provides patients convenience. Transfersomes are a form of elastic or deformable vesicle, which were first introduced in the early 1990s. Transfersomes are advantageous as phospholipids vesicles for transdermal drug delivery. Because of their self-optimized and ultra flexible membrane properties, they are able to deliver the drug reproducibly either into or through the skin, depending on the choice of administration or application, with high efficiency. The vesicular transfersomes are more elastic than the standard liposomes and thus well suited for the skin penetration.

Keywords: Herbal technology, transferosomes, transdermal drug delivery system, novel drug delivery system

DEVELOPMENT OF RP-HPLC METHOD FOR SIMULTANEOUS DETERMINATION OF DRUG CEFIXIME AND ORNIDAZOLE IN TABLET DOSAGE FORM

Saltanat Sultana Qureshi*, Jitender K. Malik, Shivakant Shukla

Lakshmi Narain College of Pharmacy, Bhopal (M. P)
Email: saltanatqureshi2011@gmail.com

Abstract

A simple precise, and accurate HPLC method for assay of combine dosage form of Cefixime and Ornidazole in commercial tablets. Reversed-phase liquid chromatographic analysis on an Aqurasil SS (150 mm 4.6 mm i.d., 5 µm particle size) column. The flow rate of the mobile phase 0.6 ml/min and the injection volume 20 µl. Detection at 304 nm. The method validated for specificity, linearity, precision, accuracy, robustness, and by stress testing of the drug (forced degradation). Response in a linear function of drug concentration in the range *0.08-0.32 mg/ml (r*= 0.9992). Accuracy between 98.20 and 99.59 %. The method found to be robust, suitable for assay of Cefixime and Ornidazole in a tablet formulation.

Keywords: Cefixime and ornidazole, stability indicating assay, method validation.

REDUCING BCL-2 PROTEIN EXPRESSION AND INCREASING BAX PROTEIN EXPRESSION ON HELA CELL AS APOPTOTIC MODE OF 5α-OLEANDRIN ISOLATED FROM THE LEAVES OF *NERIUM INDICUM* MILL.

Mae Sri Hartati Wahyuningsih[a*], Sofia Mubarika[a], Ibnu G. Ganjar[b], Subagus Wahyuono[b], Tatsuo Takeya[c]

[a]Faculty of Medicine Gadjah Mada University, Yogyakarta, Indonesia, [b] Faculty of Pharmacy, Gadjah Mada University, Yogyakarta, Indonesia, [c]Graduate School of Biological Sciences, Nara Institute of Science and Technology, Ikoma, Japan

[*]Email: maeshw@ugm.ac.id, maeshw98@yahoo.com

Abstract

The leaves of *Nerium indicum* Mill have been utilized traditionally to cure cancer. By using Bioassay guided extraction and isolation method, six compounds were isolated from an active fraction of the $CHCl_3$ extract of *N. Indicum* leaves. 5-α oleandrin is the best cytotoxic compound on HeLa cells *in vitro* (IC_{50}, 8,38 $x10^{-6}$ mM) among others. However mechanism of action of the compound hasn't been evaluated yet. The aims of this study were to determine the mechanism of action at molecular level. The action mechanism of 5α-oleandrin on HeLa cells was analyzed by staining the cells with Hoechst 33342; agarose gel electrophoresis to determine DNA fragmentation; and western blotting to determine Bcl-2 and Bax protein expression. The result indicated that incubation of HeLa cell with 5α-oleandrin concentration $3,47x10^{-4}$ mM (24 h) followed by staining with Hoechst 33342, a broken up light blue color of nucleus was seen (compared with intensive color of untreated control). The same concentration by gel electrophoresis, a smear band at about 200 bp was observed. In addition, cells treated with 5α-oleandrin displayed a decreasing of the Bcl-2 protein expression and increasing of the Bax protein expression. Based on those data, it is concluded that 5α-oleandrin, induces apoptosis by reducing the Bcl-2 protein expression but the Bax protein expression increases.

Keywords: *Nerium indicum*, 5α-oleandrin, cytotoxicity, DNA, anticancer.

HPLC/lC-MS GUIDED PHYTOCHEMICAL SCREENING OF *ASTRAGALUS MEMBRANACEUS*, AND PREDICTION OF POSSIBLE CYTOCHROME P450 INTERACTIONS

Saneesh Kumar[a*], Nontombi Sephule[c], Charles Awortwe[a], Patrick J. Bouic[b,c], Bernd Rosenkranz[a]

[a]Division of Clinical Pharmacology, Department of Medicine, University of Stellenbosch, Cape Town, RSA, [b]Division of Medical Microbiology, Faculty of Health Sciences, University of Stellenbosch, Cape Town, RSA, [c]Synexa Life Sciences, Montague Gardens, Cape Town, RSA
***Email: saneesh.7.kumar@gmail.com**

Abstract

The dried roots of *Astragalus membranaceus* (Fabaceae) are used as folklore medicine for multifarious diseases including HIV/AIDS, in Africa. Objective of study was to determine the phytoconstituents present in the roots of A. *membranaceus*, using methanol, ethanol, aqueous and ethyl acetate solvent extractions, and assess the potential of each extract in altering the activity of cytochrome P450 enzymes. Exhaustive extraction, of the dried roots of A. *membranaceus*, was done using water, methanol, ethanol and ethyl acetate, and qualitative analysis was completed using biochemical tests, HPLC analysis and multiple reaction monitoring HPLC combined with electrospray ionisation and tandem MS (HPLC–ESCI/MS/MS) using quercetin, caffeine, coumarin, lanatoside C, and gallic acid as reference standards for flavonoids, alkaloids, coumarins, cardiac glycosides, and phenols. The biochemical tests confirmed the presence of alkaloids, saponins, phenols, glycosides, terpenoids, flavonoids and coumarins in almost all extracts, the methanol extracts having the most, compared to the other solvent extracts. The HPLC analysis baselined quercetin, coumarin, lanatoside C, caffeine, and gallic acid standards with retention times 0.71 min, 1.23 min, 1.93 min, 1.25 min and 0.79 min respectively, and all the extracts with retention times±0.62 min,±1.0 min,±0.56 min,±0.36 min and±0.78 min on the average, with respect to their equivalent standards. The LC/MS analysis further confirmed the presence of flavonoids, phenols, glycosides and coumarins in most extracts with MRM scan retention times in close proximity with the masses of the daughter ions of the standards; 1.64 min for quercetin, 2.44 min for caffeine, 6.92 min for lanatoside C, 2.08 min for coumarin and 1.3 min for gallic acid. The methanol extract had lanatoside C equivalent with MRM daughter ion scan retention time matching at 6.94 min. The ethyl acetate extract had alkaloids that matched caffeine MRM daughter mass scan range, though at a different retention time. Full scans both positive and negative ion modes, also showed the presence of many phytoconstituents in the same class of compounds as the internal standards. The assessment model baselined flavonoids (quercetin) as potential inducers, terpenoids and coumarins as potential inhibitors, the alkaloid caffeine as an inducer and glycoside derivates as inhibitor. The phytochemical fingerprints of all the extracts from A. *membranaceus* projected the possibility of its inhibitory/inducive effect on the cytochrome P450 enzymes. In conclusion, the results show that the consumption of A. *Membranaceus* together with conventional drugs may present a risk of possibly relevant herb-drug interaction.

Keywords: *Astragalus*, HPLC/lC-MS, phytoconstituents, fingerprint, cytochrome P450, flavonoids, glycosides, coumarin.

EFFICACY OF 4-HYDROXYISOLEUCINE FROM FENUGREEK SEEDS AGAINST CENTRAL NERVOUS SYSTEM COMPLICATIONS OF DIABETES: *IN VIVO* AND *IN VITRO* EVIDENCE

Prasad Thakurdesai[a,*], V. Mohan[a], Mohammad Adil[b], Amit Kandhare[b], Subhash Bodhankar[b], Mousumi Dutta[c], Arnab K. Ghosh[c], Debasish Bandyopadhyay[c]

[a] Indus Biotech Private Limited, Pune, India. [b]Poona College of Pharmacy, Bharati Vidyapeeth Deemed University, Pune, India. [c]Oxidative Stress and Free Radical Biology Laboratory, Department of Physiology, University of Calcutta, University College of Science and Technology, Kolkata, India
***Email: prasad@indusbiotech.com**

ABSTRACT

Objective of present was to evaluate the efficacy of 4-hydroxyisoleucine (4HI), a major amino acid component of fenugreek seeds, against central nervous system (CNS) complications of diabetes mellitus (DM) using *in vivo* (streptozotocin (STZ) induced depression and anxiety in rats) and *in vitro* (copper ascorbate (CuAs) induced oxidative stress in isolated goat brain mitochondria) studies. During *in vivo* study, the experimental DM was induced in rats with STZ (45 mg/kg, intraperitoneal). After development of DM for next 8 w, rats were administered orally with either vehicle (STZ control) or Pioglitazone (PIOZ, 10 mg/kg) or 4HI (10, 20, 40 and 80 mg/kg) for next 4 w and glycemic, behavioral, neurochemical parameters were measured. The *in vitro* system involved isolation of goat brain mitochondria and incubating them with CuAs system in absence and presence of 4-HI for one h. The levels of oxidative stress biomarkers, enzymes of Kreb's cycle and mitochondrial respiratory chain and mitochondrial morphology were measured. Sub-acute treatment of 4HI showed reversal of STZ induced changes such as hyperglycemia, reduced food intake, increased anxiety (elevated plus maze, EPM), increased depressive behavior (tail suspension test, TST), reduced locomotion (Open field test, OFT), reduced level of brain neurotransmitters (GABA, dopamine, serotonin, nor-adrenaline). The mitochondria when co-incubated with 4HI showed significant protection against CuAs induced oxidative stress mediated responses in isolated goat brain mitochondria. The present study provided promising evidence of efficacy for 4HI against CNS complications of DM probably through serotoninergic and/or antioxidant defense system mechanisms.

Keywords: 4-hydroxyisioleucine, Fenugreek seeds, diabetic complications, oxidative stress, isolated goat brain mitochondria

THYMOL REDUCES ARSENIC INDUCED HYPERCONTRACTION IN ISOLATED AORTA AND TRACHEA

Swati Kundu, Seemi Farhat Basir, Luqman A. Khan*

Cardiovascular Cell Signaling Lab, Department of Biosciences, Faculty of Natural Sciences, Jamia Millia Islamia, New Delhi 110025, India
Email: lkhan@jmi.ac.in

Abstract

In present study Relaxant effect of thymol is evaluated against arsenic-induced hyper contraction in isolated aortic and tracheal tissues of rat. Thoracic aortic and tracheal rings, obtained from male Wistar rats were mounted in an AD-Instruments (Australia) organ bath system and isometric contraction recorded. Results showed that varying concentrations of thymol (1 μM, 100 μM and 1 mM) inhibited the contraction produced by phenylephrine (PE) in aorta and acetylcholine (ACh) in trachea. This inhibition was saturating at 100 μM thymol and 26 % & 33 % for aorta and trachea, respectively. Magnitude of this inhibition increased in presence of the Ca^{2+} channel blocker (verapamil, 1 μM) but remained unaltered in the presence of saturating concentration of ROS inhibitor (apocynin, 100 μM) indicating that thymol causes relaxation by quenching ROS. Arsenic induced hyper contraction, known to be caused primarily by increase in ROS, was effectively ameliorated by thymol in both aortal and tracheal systems. It was concluded that thymol causes relaxation of unexposed and arsenic-exposed hyper contracted aortic and tracheal rings, an effect that appears to be mediated through ROS quenching.

Keywords: Aorta, arsenic, thymol, trachea.

VIRTUAL SCREENING AND MOLECULAR DYNAMICS SIMULATION FOR ALLOSTERIC POCKET OF DENGUE VIRUS NS2B/NS3 PROTEASE

Azat Mukhametov[a]*, E. Irene Newhouse[b], Nurohaida AB Aziz[a], Jennifer A. Saito[a], Maqsudul Alam[a,b,c]*

[a]Centre for Chemical Biology, Universiti Sains Malaysia, 11800, Penang, Malaysia, [b]Advanced Studies in Genomics, Proteomics and Bioinformatics, University of Hawaii, 2565 McCarthy Mall, Honolulu, HI 96822, United States, [c]Department of Microbiology, University of Hawaii, 2538 McCarthy Mall, Honolulu, HI 96822, United States

Email: azatccb@gmail.com, alam@hawaii.edu

Abstract

Molecular mechanism of allosteric inhibition of Dengue NS2B/NS3 protease was studied and new allosteric inhibitors identified. Allosteric pocket of NS2B/NS3 protease was identified with Site Map application (Schrodinger); virtual screening of small molecule databases performed with Glide, followed by Molecular Dynamics (MD) simulations for protein and protein-ligand complexes (AMBER/NAMD), MM PB/GBSA calculations of free energy of binding, calculation of hydrogen bonds occupancies, preliminary *in vitro* assessment of inhibitory activity with recombinant protease. Twelve compounds were selected from the results of virtual screening: synthetic compounds, chal cones, and adenosine derivatives. Docking of libraries of nucleosides and hexoses revealed the ATP and Glucose are able to bind the Allosteric Pocket of DENV NS2B/NS3 protease. All protein-ligand complexes were stable during MD simulations. Preliminary study of activity of the identified compounds in recombinant viral protease assay confirmed inhibiting activity for all compounds. In conclusion, two feasible molecular mechanisms of inhibition were studied. The identified ligands worked through both: a) creating hindrances for substrate interaction with the catalytic triad, or modulating the activity of the catalytic triad by electron density perturbation, and b) interfering with the motion of the C-terminal of NS2B into the allosteric pocket during formation of the "closed" protein conformation. Two parameters govern allosteric inhibition activity: strength of binding, and geometrical fitting into the underlying mechanism of inhibition. While these two parameters vary among the compounds found, the adenosine derivatives fit best with both parameters.

Keywords: Dengue, DENV2, NS2B/NS3 protease, ATP, glucose, allosteric inhibitors.

METHIONINE AND ANTIOXIDANT POTENTIAL OF *FICUS BENGHALENSIS* LATEX AGAINST CISPLATIN INDUCED LIVER INJURY IN RATS

Yogesh C. Yadav*[a], A. K. Seth[a], Swapan Goswami[b]

[a]Department of Pharmacy, Sumandeep Vidyapeeth, Piparia Vadodara (G. P.) 391760, India, [b] Department of Pathology, S. B. K. S Medical Institute & Research Centre, Sumandeep Vidyapeeth, Piparia Vadodara (G. P.) 391760, India. Email: yogeshycypcology2@gmail.com

Abstract

This study was to determine hepato protective effect of methanol extract of *F. benghalensis* latex against cisplatin hepatotoxicity in rats. In experimental protocol animals were divided in five groups each groups contained six animals. Group I (control) was received acacia (2% w/v) of 5 ml/kg throughout the experiment for 16 d. The group II (cisplatin treated) was received single dose of cisplatin (7.5 mg/kg i. p.) on 1st day. Group III (extract control) was received extract (600 mg/kg p. o.) of extract for 1st to 10th day. Group IV (Protective) was received extract (300 mg/kg p. o.) of *F. benghalensis* latex for 1st to 10th day and administered single dose of cisplatin (7.5 mg/kg, i. p.) on 11th day and group V (protective) was administered extract (600 mg/kg p. o.) of *F. benghalensis* latex for 1st to 10th day and administered single dose of cisplatin (7.5 mg/kg, i. p.) on 11th day. On the 6th day in cisplatin treated, 10th day in extract control and 16th day in control, protective, blood withdrawn from retro-orbital sinus of rats for biochemical estimation in blood serum and dissected out the livers for estimation of antioxidant enzymes and histopathological works. The cisplatin-treated group 2 showed significant increase serum Alanine Aminotransferase (SGPT), Aspartate Aminotransferase (SGOT), Alkaline phosphatase (ALP) and hepatocytes cells degeneration inflammatory infiltrate and necrosis it's were significantly (**P<0.01) alleviates by protective groups. It has been concluded on basis of biochemical parameters and histopathology reports to *F. benghalensis* latex could be attributed to hepato protective effect due to its antioxidant properties and good content of methionine which is possibly to acts as a free radical scavenger, lipid peroxidation inhibitor and glutathione levels preservation.

Keywords: *Ficus benghalensis* latex, cisplatin, liver injury

FORMULATION AND PHARMACOLOGICAL EVALUATION OF *SCOPARIA DULCIS* L. FOR ITS HEPATOPROTECTIVE ACTIVITY

Abhishek Sharma*, Kaushelendra Mishra, A. K. Singhai

Lakshmi Narain College of Pharmacy, Bhopal, (M. P)

Abstract

Liver is considered as the key organ in the metabolism, detoxification and secretary function in the body. Human beings are invariably exposed to numerous synthetic agents in form of drugs, bacteria, fungi, plants and animal toxicants; contribute to a variety of toxic manifestations in liver. Consequently, the liver is subjected to a number of diseases those may be classed as liver cirrhosis, acute chronic hepatitis, non-alcoholic fatty liver disease (NAFLD), drug induced hepatotoxicity, alcoholic fatty liver diseases & jaundice**.**

In India, it was reported that about 1 % of the population was infected with hepatitis C and 2-4 % with hepatitis B virus. Non-alcoholic fatty liver disease (NAFLD) is the most prevalent liver disease, affecting up to 24 % of patients in the general population and up to 74 % of those with obesity. More than 900 drugs, toxins, and herbs have been reported to cause liver injury. Drugs account for 20-40 % of all instances of hepatic failure. Approximately 75 % of the idiosyncratic drugs reactions result in liver transplantation or death. Drug-induced hepatic injury is the most common reason for withdrawal of drugs from the markets**.**

Herbal medicines are in great demand in the developed world for primary health care due to their efficacy, safety and lesser side effects. Recently, considerable attention has been paid to utilize eco-friendly and bio-friendly plant-based products. The current availability of high-tech methods allows researchers to optimize the effectiveness, standardization and clinical testing of these herbs to meet international standards. A wide group of medicinal plants and preparations had been used over centuries almost exclusively as antimicrobial, cytotoxic, antidiabetic, anti-inflammatory, etc. In addition, numerous plants and poly herbal formulations are used in treatment of liver related disorders. It has been estimated that there are some 200 million carriers of the hepatitis B virus, of which 40 % are of carcinoma and 15 % of cirrhosis**.**

Keywords: *Scoparia dulcis* l., hepatoprotective, poly herbal formulations.

PHARMACOLOGICAL ACTIVITIES ON GLYCYRRHIZA GLABRA–A REVIEW

Kaushelendra Mishra

Lakshmi Narain College of Pharmacy, Kalchuri Nagar Raisen Road, Bhopal, (M. P.), 462021

Abstract

Indisputably the third millennium is witnessing the worldwide changes in healthcare. Ayurvedic system of healthcare has gained good popularity. Ayurveda is a profound and comprehensive system of health care that originated in India. This system endeavors to rationalize the all phenomena governing empirical experiences with natural products in medicine. Ayurvedic medicare system has attained popularity at global level to replace the synthetic chemicals as they have shown less adverse reactions. Numbers of plants have been mentioned in classical text of ayurveda for the management of several diseases. Numbers of plants have been mentioned in classical text of ayurveda for the management of several diseases. No doubt that several researchers had given their contributions for the renaissance of hidden therapeutic potential of number of ayurvedic drugs, But still number of plants need a thorough work on them.

The licorice shrub is a member of the pea family and grows in subtropical climates in rich soil to a height of four or five feet. It has oval leaflets, white to purplish flower clusters, and flat pods. Below ground, the licorice plant has an extensive root system with a main taproot and numerous runners. The main taproot, which is harvested for medicinal use, is soft, fibrous, and has a bright yellow interior. Glycyrrhiza is derived from the ancient Greek term glykos, meaning sweet, and rhiza, meaning root1. Glycyrrhiza glabra Linn (Fam. Leguminosae) consists of dried, unpeeled, stolon and root. The plant is a tall perennial herb, up to 2 m high found cultivated in Europe. Persia, Afghanistan and to little extent in some parts of India2 In India the plant is cultivated in Punjab and sub Himalyan tract 3,4. The plant is meant to hold glycyrrhizin, glycyrrhizic acid, glycyrrhetinic acid, asparagine, sugars, resin and starch as main constituents 2, 5. G. glabra or liquorice has been known in pharmacy for thousands of years.

Keywords: Glycyrrhiza glabra**,** glycyrrhizin, glycyrrhizic acid, glycyrrhetinic acid

SYNTHESIS, ANTIFUNGAL ACTIVITY AND QSAR STUDY OF TERBINAFINE ANALOGUES

Dr. V. M. Kulkarni [a], Dr. S. S. Shyale[b], Vinayak Sawant [a], Sachin J. Anbhule* [a, b]

[a] Department Of Pharmaceutical Chemistry, Bharati Vidyapeeth Univercity's Poona College Of Pharmacy, Pune, Maharashtra, [b] Department Of Pharmaceutical Chemistry, H. S. B. P. V' S, GOI, College Of Pharmacy, Kashti, Shrigonda, Dist. Ahmednagar

Abstract

To the date, much research has been directed towards the discovery of novel antifungal drugs. Many antifungal drugs contain naphthalene as basic nucleus such as terbinafine, naftiffine, and tolnaftate. Based on this and knowledge obtained from literature review 1-naphthyl methylamine was selected as the lead unit for the development of new chemical entities as antifungal agents. 1-naphthyl methylamine derivatives were synthesized using different aromatic and hetroaromatic amines as a side chain. Synthesized compounds were characterized by different methods for their structural confirmation. These eleven compounds were tested for antifungal activity by using different microorganism. Biological activity was presented in the form of zone of inhibition and MIC value. From the eleven compounds VMKV-4 and VMKV-8 have maximum activity, compared to standard Terbinafine. These compounds have substituents-NO2,-imidazole and-triazole moiety respectively in basic structures. The activity pattern of these compounds is justified since many existing drugs have this kind of substituents. These newly synthesized antifungal agents were subjected to QSAR study and from the regression equation it was found that Log P and VAMP HOMO, VAMP ionization potential parameters are important for activity. A good statistical correlation (r = 0.72) with biological activity was obtained. In conclusion, considering these parameters, the series of 1-naphthyl methylamine reacted with various substituted anilines giving new derivatives which can be further explored to discover novel antifungal agents which may have squalene epoxidase inhibitory activity with minimum side effects.

Keywords: Antifungal activity, QSAR, biological activity.

DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATIONOF POLYFUNCTIONAL FLAVONES: POTENTIAL ANTI-ALZHEIMER's AGENTS

Manjinder Singh*, Om Silakari

Molecular Modeling Lab (MML), Department of Pharmaceutical Sciences & Drug Research, Punjabi University, Patiala, 147002, India
Email: manjinder2007@gmail.com

Abstract

Poly functional compounds comprise a novel class of therapeutic agents for the treatment of multi-factorial diseases. The present study reports a series of flavones (5a-5n) as poly functional compounds. All synthesized compounds were tested for the estimation of acetylcholinesterase inhibitory activity, *in vitro* estimation of advanced glycation end products (AGEs) formation inhibitory assay and oxygen-radical absorbance capacity. The binding patterns of potent compounds with AChE enzyme were analyzed by molecular docking studies using Glide program of Schrodinger software. Most of the synthesized compounds were potent AChE inhibitors than donepezil. Additionally, the compounds were found to possess antioxidant and AGEs formation inhibitory activities, comparable to ascorbic acid and amino guanidine respectively. Out of all the synthesized compounds, 5m, 5b and 5j were the most potent Acetylcholinesterase inhibitors. Additionally, most of the compounds exhibited radical scavenging activity comparable to ascorbic acid with considerable AGEs formation inhibitory activity. Molecular docking studies performed to explore the detailed interactions of compounds with AChE, showed that potent compounds displayed good anticholinesterase activity able to bind with both CAS and PAS pockets of the AChE. On the basis of present study it can be concluded that synthesized compounds are effective in modulating three pathophysiological pathways of Alzheimer's disease and may be explored for its treatment.

Keywords: AChE inhibitor, alzheimer's disease, antioxidants, Flavonoids, AGEs, advanced glycation end products.

PRIONS: THE GENETICS AND IMPORTANCE IN PUBLIC HEALTH PRACTICE

Dr. Shazina Saeed[1*], Dr. Shamimul Hasan[2], Dr. Arpita Rai[2], Dr. Ansul Kumar[3]

[1*]Department of Human Genetics, University of Pittsburgh, USA, [2]Department of Oral Medicine and Radiology, Faculty of Dentistry, Jamia Millia Islamia, New Delhi, India, [3]PGIMER Dr. RML Hospital, New Delhi, India

Abstract

Prions are infectious, transmissible, proteinaceous particles lacking nucleic acid. They are composed of endogenous cellular prion protein (PrP^{c}), which is soluble and proteinase sensitive. However, its pathogenic isoform (PrP^{sc}) is insoluble and proteinase resistant, and causes a variety of lethal neurodegenerative diseases called transmissible spongiform encephalopathies. Approximately 10–15% of people with prion disease have a genetic form. Prions are a single gene disorder that results due to mutations in the prion gene (*PRNP*) on chromosome 20. Objective of study was to review the current literature on the prion diseases and it's genetics. Also, to understand the importance of identifying high risk patients and taking outmost care to prevent cross transmission of infection. A literature search for relevant articles was performed using Pub Med, Ovid Medline and Google scholar. Finally, a Google search was done to complete a comprehensive search of the World Wide Web to ensure completeness of the search. Approximately 189 articles from 1993 to 2014 were identified. Article title duplicates were removed and a total of 43 articles were searched for relevancy of contents. Further articles were identified by reviewing the references and bibliographies of searched articles. In conclusion, Infection control due to prions has emerged as an issue of public health relevance. Knowing the genetic background forms the basis of potential gene modifying therapies. The infection transmission risk can be minimized by emphasizing the importance of identifying high-risk patients.

Keywords: Prions, transmissible spongi from encephalopathies, genetics, public health.

APOPTOSIS INDUCING ACTIVITY OF BAICALEIN COATED IRON OXIDE NANOPARTICLES IN TRIPLE NEGATIVE BREAST CANCER CELLS (MDA MB 231)

Kavithaa, K., Padma, P. R and Sumathi, S.

Department of Biochemistry, Biotechnology and Bioinformatics, Avinashilingam Institute for Home Science and Higher education for Women University, Coimbatore-641 043, TN, India
Email: kavi.kavithu@gmail.com

Abstract

Magnetic nanoparticles have shown an increasing number of applications in the field of molecular medicine among that iron oxide nanoparticle have been widely used in biomedical research due to its biocompatibility, targeted delivery and magnetic properties. Triple-negative breast cancers (TNBC) comprise a very heterogeneous group of cancers and it does not express the genes of estrogen and progesterone receptor. In the present study we investigated the controlled synthesis of biodegradable polymer coated iron oxide nanoparticles (Fe_2O_3) loaded with anticancer compound baicalein and evaluation for their loading capacity, releasing behavior and the anticancer property in selected triple negative breast cancer cell line (MDA MB 231). The synthesized nanoparticles were characterized by SEM, TEM, FT-IR, XRD, DLS, VSM and zeta potential analysis. The viability and cytotoxicity were assessed by MTT and apoptotic events were examined by various apoptotic staining methods. Furthermore, the flow cytometric analysis was employed to investigate the stages of apoptotic cells. The synthesized nanoparticles were monodispersive, crystalline, retained magnetic properties, significant level of drug carrying potential cum release behavior. Furthermore we found significantly enhanced baicalein-induced cytotoxicity and apoptosis in selected breast cancer cells. Flow cytometry analysis revealed decrease in normal cells and increase apoptotic cells indicative of apoptosis induction. Our findings suggest that baicalein loaded Fe_3O_4 nanoparticles have high value of apoptosis inducing activity.

Keywords: Anticancer; Baicalein; drug delivery; iron oxide nanoparticles.

ROLE OF CURCUMIN IN REGULATION OF PLASMA MEMBRANE REDOX SYSTEM (PMRS) ACTIVITY OF ERYTHROCYTES AND ANTIOXIDANT POTENTIAL OF PLASMA

Prabhakar Singh, Syed Ibrahim Rizvi

Department of Biochemistry, University of Allahabad, Allahabad, India
Email: pruebiochem@gmail.com

Abstract

Plasma membrane redox system (PMRS) is an electron transport chain ubiquitously present in all cell types to transfers electron from intracellular substrates to extracellular acceptor is known to be involved in the regulation of redox homeostasis. Health-promoting effects of curcumin on cell physiology were recognized due to its strong antioxidant potential regulating redox status in successful cell physiology. The present survey was undertaken to determine the modulatory role of curcumin on erythrocyte PMRS activity in control and experimental oxidative stress *in vitro* and validated through *in vivo* work. An effort has also been made to correlate PMRS and antioxidant potential of plasma. *In vitro* we have determined the effects of curcumin (10^{-5} to 10^{-8} M) on the activities of PMRS in erythrocytes obtained from 24 normal healthy humans of both sexes between the ages of 22 and 42 y. Above *in vitro* finding has been validated through *in vivo* experiments by oral supplementation of curcumin (340 and 170 mg/kg b.w.) to Wistar rats. Results show significant dose-dependent down-regulation effects of curcumin on PMRS activity. We also present evidence that erythrocyte PMRS activity is high *in vitro* as well as *in vivo* in oxidative stress, which was mitigated by the presence of curcumin. Dose-dependent down-regulation effect of curcumin on PMRS activity is a compensatory/protective mechanism against oxidative stress which operates to maintain the antioxidant level in plasma. The findings provide an insight into the role of curcumin and their involvement in the health beneficial effects.

Keywords: Erythrocyte, PMRS, curcumin, oxidative stress.

STUDIES ON PHYTOCHEMICAL SCREENING, ANTIOXIDANT ACTIVITY AND ANTIBACTERIAL ACTIVITY OF *SALACIA OBLONGA* STEM EXTRACT

C. Gladis Raja Malar[1] and C. Chellaram[2,3]*

[1]Ph. D Student, Dept. of Biotechnology, Sathyabhama University, Chennai 100119 TN, [2]Dept. of Biomedical Engineering, Vel Tech Multitech. College, Chennai 600602 TN, [3]Vel Tech University, Avadi. Chenna 600062 TN, India

***Email: chellaramvtmt@gmail.com**

Abstract

The present study was performed to investigate the phytochemical screening, total flavonoid, antioxidant activity and antibacterial activity from the stem extract of *Salacia oblonga*. The phytochemical analysis revealed the presence of active ingredients such as steroids, saponins, phenols, flavonoids, terpenoids, alkaloids and quinones in the stem extract of *Salacia oblonga*. Total flavonoid content was quantitatively estimated which recorded maximum in Hubli accession (19.82 mg Quercetin Equivalents (QE)/g). The stem extracts were evaluated for antioxidant activities by DPPH (1, 1–Diphenyl-2-picryl-hydrazyl) radical scavenging assay. Among the three accessions (Hubli, Udipi, Jogimat) with different solvent extractions, the maximum antioxidant activity was found in the Aqueous stem extract (84.3 %) of *Salacia oblonga* in Hubli accession followed by others (Udipi 72.9 %, Jogimat (68.0 %). Different concentrations of aqueous stem extract were tested using the agar disc diffusion technique for the activity against *Bacillus cereus, Pseudomonas aeruginosa, Staphylococcus aureus* and *Bacillus subtilis*. It was found to be inactive against *Escherichia coli.*

Keywords: *Salacia oblonga*, phytochemicals, antioxidant, antibacterial activity.

SYNTHESIS AND ANTICANCER EVALUATION OF 2-ERCAPTOBENZIMIDAZOLE SCHIFF BASES

Snehlata Yadav*, Narasimhan B.

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

Abstract

Schiff bases (condensation products of primary amines with carbonyl compounds) are an important class of organic compounds reported to possess a wide range of activities such as antimicrobial, anticancer, anti-inflammatory, anticonvulsant, analgesic and antitubercular activities. Apart from biological activities, Schiff bases are also used as catalysts, intermediates in organic synthesis, dyes, pigments, polymer stabilizers and corrosion inhibitors. A series of 2-mercaptobenzimidazole Schiff bases was synthesized using 2-mercaptobenzimidazole as starting compound. The 2-mercaptobenzimidazole ester obtained was converted to hyrazide derivative which was further reacted with different aromatic or hetero aromatic aldehydes to obtain the Schiff bases of 2-mercaptobenzimidazole. The synthesized derivatives were characterized by physicochemical and spectral means. The anticancer activity of the series was evaluated against breast cancer cell line MCF-7 using SRB assay. 5-Flourouracil and carboplatin were used as standard anticancer drugs. Among the synthesized derivatives, compound 19 (IC_{50}= 0.48µg/ml) emerged as the most effective anticancer agent for breast cancer and it was found to be much more active than the standard drugs. Further, from the SAR studies, it was found that Schiff bases having heterocyclic moiety or electron withdrawing groups at *p*-position as substituent yielded the most potent anticancer derivatives.

Keywords: Schiff bases, anticancer, MCF-7, carboplatin.

EVALUATION OF POWDER AND TABLETING PROPERTIES OF CROSS LINKED CHITOSAN

Purushottam R Patil [A*], Milind P Wagh [B], Sanjay R Chaudhari [C]

[a] Government College of Pharmacy, Aurangabad 431005,Maharashtra, India, Research Scholor, JNTU Kakinada 533003, A. P, India, [b] NDMVPS's College of Pharmacy, Gangapur road, Nashik 422002, Maharashtra, India, [c] Amrutvahini College of Pharmacy, Amrutnagar, Sangamner 422608, Maharashtra, India
[*]Email: prpatilgcop@gmail.com

Abstract

The aim of this study was to analyze the process of tablet formation and the properties of the resulting tablets for various cross linked chitosans. Material properties, such as water content, particle size and morphology, cross linking, flow properties, glass transition temperature and molecular weight were studied. The process of tablet formation was analyzed, Heckle analysis, the pressure time function, and energy calculations in combination with elastic recovery dependent on maximum relative density, time and swelling index. The crushing force and the morphology of the final tablets were analyzed. In summation, chitosans show plastic deformation during compression combined with high elasticity after tableting. Highly mechanically stable tablets results.

Keywords: Tablet, chitosan, cross linking, material properties, morphology.

RECENT REVIEW IN BIOAVAILABILITY METHODS ENHANCEMENT

Akshat Sharma, Dr. G. K Saraogi

Department of Pharmaceutics, Lakshmi Narain College of Pharmacy, Bhopal, (M. P)
Email: akshatocp2006@gmail.com

Abstract

According to United States of Food and Drug administration Bioavailability is defined as the rate and extent (amount) of absorption of unchanged drug from its dosage form reaches into the systemic circulation. Bioavailability is important parameter to achieve desired concentration of drug in systemic circulation for pharmacological response to be shown. Those drugs having a poor bioavailability have poor aqueous solubility, slow dissolution rate in biological fluids, poor stability of dissolved drug at physiological pH, poor permeation through biological membrane. The poorly water soluble drugs require high doses in order to reach therapeutic plasma concentrations after the drug taken from oral route. Any drug to be absorbed must be present in the form of an aqueous solution at the site of absorption. There are several methods to enhance the bioavailability of drugs including size reduction, solubilising excipients, colloidal drug delivery systems, pH adjustment, solid dispersion, complexation, co-solvency, micellar solubilisation and hydrotropy etc.

Keywords: Bioavailability, solubilisation, pH adjustment.

SYNTHESIS OF NOVEL ERYTHROMYCIN DERIVATIVES AND EVALUATED FOR ANTIBACTERIAL ACTIVITY

Jitender K. Malik*, Kaushelendra Mishra

Lakshmi Narain College of Pharmacy, Bhopal (M. P)
Email: jitender_malik@hotmail.com

Abstract

A novel series of Substituted Erythromycin derivatives (5-7) were synthesized by methylation of substituted S-MOP (4) The structures of the synthesized compounds were established by IR, ^{1}H NMR, ^{13}C NMR and Mass spectroscopical data. All the synthesized compounds were screened for their *in-vitro* antibacterial activity against Gram-positive, Gram-negative bacteria. The investigation of antibacterial screening data revealed that most of the compounds tested have demonstrated congruent activity against Staphylococcus aureus, Bacillus subtilis, Escherichia coli, and Klebsiella as compared with the standard Erythromycin. Among the series, compounds 7 exhibited excellent an antibacterial activity profile as compared with the standard. In summary, preliminary results indicate that some of the newly synthesized title compounds exhibited promising antibacterial activities and they warrant more consideration as prospective antimicrobials.

Keywords: Erythromycin; in-vitro antibacterial activity.

LIPOSOME CO-ENCAPSULATION OF SYNERGISTIC COMBINATION OF CURCUMIN AND ARTESUNATE FOR THE TREATMENT OF SUBCUTANEOUSLY GROWN BREAST TUMOR

Sarvesh Sharma[1], Vimal Kumar[2]

[1]Lakshmi Narain College of Pharmacy, Bhopal, [2]Institute of Pharmacy, Nirma University, Ahmedabad
Email: sarbiotech@yahoo.co.in

Abstract

Liposome co-encapsulation of synergistic anti-cancer drug combination is an emerging area that has demonstrated therapeutic benefit in clinical trials. Remote loading of two drugs into a single liposome constitutes a new challenge that calls for a reassessment of drug loading strategies to allow the loading of the drug combination efficiently and with high drug content. The natural compound, curcumin, was already described as a promising anticancer agent due to its multipotential properties and huge amount of molecular targets *in vitro*. Its translation to the clinic is, however, limited by its reduced solubility and bioavailability in patients. In order to overcome these pharmacokinetic deficits of curcumin, several strategies, such as the design of synthetic analogs, the combination with specific adjuvants or nano-formulations, have been developed. By taking into account the risk-benefit profile of drug combinations, as well as the knowledge about curcumin's structure-activity relationship, a new concept for the combination of curcumin with scaffolds from different natural products or components has emerged. The concept of a amalgam curcumin molecule is based on the incorporation or combination of curcumin with specific natural products already used or not in conventional chemotherapy, in one single molecule.

In this study, sequential co-encapsulation of curcumin and artesunate on the basis of solubilization behavior of these lead molecule. Curcumin and Artesunate could be co-encapsulated into liposomes in a wide range of drug-to-drug ratio, with encapsulation efficiencies of >80 %. This high encapsulated drug content did not affect the stability of the co-encapsulated liposomes upon storage for six months. The liposomes did not exhibit the fiber bundle precipitate morphology but rather an undefined structural organization in the aqueous core. The co-encapsulated liposome formulation was further tested in a subcutaneously grown, human breast tumor model, and was shown to significantly improve the survival of the tumor-bearing animals. The improvement in therapeutic efficacy was possibly due to the increase in systemic drug exposure, with the maintenance of the synergistic molar drug ratio of 1:1 in circulation.

Keywords: Liposome, curcumin, artesunate, tumor.

FORMULATION AND EVALUATION OF TOPICAL DOSAGE FORMS FOR DENTAL APPLICATIONS

Raichur Vinay[a*], V. Kusum Devi[a], Ateeq Ahamed[a]

[a]Dept. of Pharmaceutics, Al-Ameen College of Pharmacy, Near Lalbagh Main Gate, Hosur Road, Bangalore-27
Email: vinayraichur88@gmail.com

Abstract

Dental disorders namely endodontitis and periodontitis affect the pulp of for which antibiotics like ciprofloxacin, metronidazole and minocycline should be used in combination to eliminate all the possible bacteria. Presently medical practioners face difficulty to administer them as no formulation with a combination of these drugs is available in the market. Topical dosage forms such as pastes would help to administer the said combination of antibiotics at their site of action in an effective manner for a longer period of time due to their high viscosity as compared to gels and ointments which tend to get diluted by the saliva and fail to deliver drug for a longer duration. The study was initiated by developing multi component mode of analysis for the estimation of drugs at four intervals 275nm, 350nm, 425nm and 500nm to determine the concentration of drug solution mixture. Further pastes were formulated using the commercial tablets and pure drugs. Drug-drug compatibility studies by FTIR showed no changes in their characteristic peaks hence were proved to be compatible with each other. Microbiological susceptibility studies showed maximum zone of inhibition and least MIC for paste containing combination of pure drugs as compared to the individual drugs alone and marketed formulations respectively. The in-vitro release study showed 67 % drug release in 2 hours and a sustained release for 6 hours. Hence a suitable triple antibiotic formulation which is easy to administer and has better anti-microbial activity than the currently marketed formulation was successfully developed.

Keywords: Dental paste, antibiotics, compatibility studies, MIC, microbiological studies.

TWO DIMENSIONAL QSAR STUDY OF SOME NOVEL 2-AZETIDINONE SERIES FOR THEIR ANTIBACTERIAL ACTIVITY AGAINST ESCHERITIA COLI

Mehta Parul D*, A. K. Pathak

Department of Pharmacy, Barkatullah University, Bhopal, 462026, Madhya Pradesh, India

Abstract

Two dimensional quantitative structure activity relationship (QSAR) studies on series of substituted 2-azetidinone derivatives were performed by using V-LIFE MDS 3.0 software. Several statistical expression for 2D QSAR were developed using statistical methods like multiple regression, principle component regression, partial least square regression etc. Out of several models, the best five 2D QSAR models having highest correlation coefficient and cross validated squared correlation coefficient were selected for further study (r^2>0.7, q^2>0.7). QSAR study revealed that Atomic valence connectivity index, element count, electro topological, estate contribution and alignment-independent descriptors are primarily responsible for biological activity. This approach showed that physicochemical descriptor SddsN (nitro) E-index, Hydrogen's Count, Saa CH count and alignment-independent descriptors T_T_Cl_3 were found to show significant correlation with biological activity in 2-azetidinone derivatives. The information rendered by 2D QSAR models may lead to a better understanding of structural requirements of antibacterial activity and can help in the design of novel potent molecules.

Keywords: 2D QSAR, antibacterial, 2-azetidinone.

EMERGING TRENDS FOR THE TREATMENT OF SULPHUR MUSTARD TOXICITY USING DRUG COMBINATIONS

Shivakant Shukla, Abhishek Sharma, Kaushelendra Mishra

Departement of Pharmaceutics, Lakshmi Narain College of Pharmacy, Bhopal (M.P)

Abstract

A combination of drugs most commonly refers to a fixed-dose combination (FDC), is a formulation including two or more active pharmaceutical ingredients (APIs) combined in a single dosage form, which is manufactured and distributed in certain respective fixed doses. Understanding the molecular mechanisms underlying synergistic, potential and antagonistic effects of drug combinations could facilitate the discovery of novel efficacious combinations and multi-targeted agents. Sulfur mustard (2, 2`-dichlorodiethyl sulfide, SM) and nitrogen mustard (2,2`-dichlorodiethylamine, mechlorethamine, HN2) are alkylating agents that have been used for many years as chemical weapons and therapeutic drugs, respectively. SM is a highly toxic chemical warfare agent and still remains a threat to both civilians and military personnel.

In this article, we describe an extensive investigation of the published literature on the effect of drug combinations against sulphur mustard and nitrogen mustard, for which the combination effect has been evaluated by *in vitro* and *in vivo* studies. There are many papers in which drug combination have been used for reducing the toxicity of sulphur mustard and nitrogen mustard in different models. Some examples are "Efficient Protection of Human Bronchial Epithelial Cells against Sulfur and Nitrogen Mustard Cytotoxicity Using Drugs in Combinations" authors investigated the combination of sulfhydryl-containing molecules N-acetyl-cysteine (NAC) and WR-1065, the nucleophile hexamethylenetetramine (HMT), the energy-level stabilizer niacinamide (NC), the antioxidant dimethyl thiourea (DMTU), L-arginine analogues such as L-thio citrulline (L-TC) and L-nitroarginine methyl ester (L-NAME), and the anti-gelatinase doxycycline (DOX) against sulfur mustard and nitrogen mustard. Another example is "Prophylactic efficacy of combination of DRDE-07 and its analogues with amifostine against sulphur mustard induced systemic toxicity" in this paper we investigated DRDE-07, DRDE-30, DRDE-35 with amifostine against sulphur mustard toxicity using mice model. In all these studies it has been found that drugs in combination is more effective as compared to the individual drugs.

Keywords: Sulphur mustard toxicity, efficient protection, fixed-dose combination.

DEVELOPMENT AND VALIDATION OF STABILITY INDICATING RP-HPLC AND HPTLC FOR DETERMINATION OF ATORVASTATIN CALCIUM &EZETIMIBEIN BULK AND PHARMACEUTICAL DOSAGE FORMS

Pallavi M. Patil[1]

[1]P.E Society's Modern college of pharmacy, Nigdi Pune, India

Abstract

Two simple, specific, sensitive, accurate and precise stability indicating methods were described for ATO & EZE. The first method as HPLC with the use of a reversed phase GraceC-18 column (250 mm x 4.66 mm, i. d. 5µm) and mobile phase of buffer: acetonitrile (60:40 v/v) at a flow rate of 1.0 mL/min. The RT of drug was found to be6.91 min. & 10.31 min, respectively. Quantification of drug was achieved with UV de tection at 240 nm. Linear calibration curve was obtained in concentration range 2–12 µg/mL for both drugs, with r^2 value of 0.9992 & 0.9990. The limit of detection and limit of quantification were found to be 0.81µg/mL and 2.47µg/ml respectively, for ATO &0 .76µg/mL& 2.31µg/mL, respectively for EZE. The second method involved a HPTLC. Chromatographic separation was carried out with precoated silica gel G60 F254 aluminum sheets using Toluene: Methanol (8:2 % v/v) as a mobile phase. Linearity of proposed method was found to be 200–1200 ng/band at 240 nm with retention factor of 0.24 for ATO & 0.36 for EZE and r^2 value of 0.9991 & 0.9993 for ATO & EZE, respectively. The limit of detection and limit of quantification were found to be 37.04ng/band and 122.74ng/band for ATO & 37.04 ng/band and 112.25ng/band for EZE, respectively. Both the developed methods were successfully validated as per ICH guideline. ATO & EZE was subjected to different stress conditions. Stress samples were successfully assayed by developed HPLC and HPTLC method.

Keywords: RP-HPLC, HPTLC, atorvastatin calcium, Ezetimibe, Stability indicating, Validation.

Poster Presentation

RUNX1: A TRANSCRIPTION FACTOR GENE ASSOCIATED WITH LEUKEMIA REFLECTS CODON BIAS ACROSS MAMMALS

Tarikul Huda Mazumder and Supriyo Chakraborty

Department of Biotechnology, Assam University, Silchar 788011, Assam, India

Abstract

Synonymous codons encoding a particular amino acid are not used with equal frequencies in the gene transcripts in different organisms. This is called codon usage bias. The study of codon usage bias acquires significance in biology not only for understanding the evolution of a gene at molecular level but also for analyzing the functional conservation of gene expression in cellular environment. *RUNX1* gene encodes a member of the (RUNX) family of proteins also called core binding factor-α (CBFα) and is primarily involved in the differentiation of hematopoietic stem cells into mature blood cells. Literature suggests that mutation or chromosomal translocation in this gene is associated with several kinds of leukemia. The present study was based on bioinformatics approaches to elucidate the synonymous codon usage patterns in the nucleotide coding sequences of *RUNX1* gene among five mammals and to compare the selection pressure exerted at the protein level. Our results showed that nature has highly favored three most over-represented codons namely ATC, GGC and CTG in the coding sequences of *RUNX1* gene across five mammals but disfavored the TTA codon encoding leucine amino acid. We observed that purifying natural selection has affected the coding sequences of *RUNX1* gene in human and other mammals to preserve its protein function during the period of evolution.

Keywords: Gene, codon bias, amino acid

ROLE OF NANOMEDICINE IN NANOTECHNOLOGY: AN EMERGING PARADIGM

Pratibha Pand, Madhu Gupta, Vikas Sharma

Shri Rawatpura Sarkar Institute of Pharmacy, Datia, M. P., India

Abstract

Nanomedicine is a relatively new field of science and technology. By interacting with biological molecules, therefore at nanoscale, nanotechnology opens up a vast field of research and application. Interactions between artificial molecular assemblies or nanodevices and biomolecules can be understood both in the extracellular medium and inside the human cells. Operating at nanoscale allows to exploit physical properties different from those observed at microscale such as the volume/surface ratio. The investigated diagnostic applications can be considered for *in-vitro* as well as for *in-vivo* diagnosis. *In-vitro*, the synthesized particles and manipulation or detection devices allow for the recognition, capture, and concentration of biomolecules*. In-vivo*, the synthetic molecular assemblies are mainly designed as a contrast agent for imaging. A second area exhibiting a strong development is "nanodrugs" where nanoparticles are designed for targeted drug delivery. The use of such carriers improves the drug biodistribution, targeting active molecules to diseased tissues while protecting healthy tissue. A third area of application is regenerative medicine where nanotechnology allows developing biocompatible materials which support growth of cells used in cell therapy. Nanomedicine can contribute to the development of a personalised medicine both for diagnosis and therapy.

Keywords: Nanotechnology, devices, drug therapy, nanomedicines

CODON USAGE IN HUMAN MITOCHONDRIAL GENES IN THE CONTEXT OF CANCER

Arif Uddin and Supriyo Chakraborty

Department of Biotechnology, Assam University, Silchar 788011
Email: supriyoch_2008@rediffmail.com

Abstract

Mitochondria is the power house of the cell**.** Mitochondrial DNA is more susceptible to oxidative damage due to the lack of histone protein and chromatin structure. The alteration in the level of gene expression in cytochrome c oxidase gene is associated with cancer. The expression in *coxiii* gene was found to be lower in human colonic carcinoma. However, a systematic analysis of codon usage in human mitochondrial protein coding genes has not been reported yet. This study would give an insight into the understanding of the pattern of codon usage and expression in human mitochondrial genes. We used bioinformatics approach to analyse the codon usage parameters. The comparison of codon usage pattern among different mitochondrial genes suggests that mitochondrial genes have a lower level of codon usage bias. Furthermore, the principal component analysis suggests the presence of variation in codon usage in different mitochondrial genes in human. Highly significant positive correlation between ENC and GC3 ($r=0.782^{**}$, $p<0.01$), nucleobases C and C3 ($r=0.655^{*}$, $p<0.05$), GC and GC3 ($r=0.690^{**}$, $p<0.01$) suggest that mutation pressure played an important role in codon usage bias. Non significant correlation of GC1 with GC2 and GC3 reveals that natural selection considerably influenced the codon usage in human mitochondrial protein coding genes. Highly significant positive correlation between ENC and CAI ($r=0.762^{**}$, $p<0.01$) further indicates that nucleotide composition has influenced the gene expression in human mitochondrial genes. In conclusion**,** natural selection and mutation pressure are found to play major roles in shaping the low bias in the protein coding genes of human mitochondrial DNA, although codon usage bias is not remarkable.

Keywords: Mitochondrial DNA, synonymous codon usage bias, gene expression

RECENT ADVANCEMENT IN TABLET TECHNOLOGY

***Pragya Bhargava, Shailja Gour, Gaurav Saraogi, Akshat Sharma, A. K. Singhai**

Lakshmi Narain College of Pharmacy, Bhopal, (M. P.)

Abstract

Tablets and capsules are the most commonly used dosage forms all over the world, due to patient compliance, flexibility in dosage regimen and designing of the dosage form. Besides the oral mode of administration, the other tablets may possess more or less the same features which are attributed to conventional oral tablets. A bulk of the research scientist is involved industry, academic liaison to propose implement newer heights in tablet technology. Granulation is one of the most important unit operations in the production of pharmaceutical oral dosage forms. Granulation process will improve flow and compression characteristics, reduce segregation, improve content uniformity, and eliminate excessive amounts offline particles. The results will be improved yields, reduced tablet defects, increased productivity, and reduced down time. Pharmaceutical products are processed off over the world using the direct compressing, met granulation, or dry granulation methods. Which method is chosen depends on the ingredients individual characteristics and ability to properly flow, compresses, eject and disintegrate. Choosing a method requires thorough investigation of each ingredient in the formula, the combination of ingredients, and how they work with each other. Then the proper granulation process can be applied.

Keywords: Foam binder granulation; melt granulation, moisture Activated Dry Granulation, All in one Granulation

COMPARATIVE CODON BIAS ANALYSIS OF *HA* GENE IN INFLUENZA A VIRUS SUBTYPES ACROSS HUMAN, SWINE AND AVIAN HOSTS

Himangshu Deka, Supriyo Chakraborty, Binata Halder

Department of Biotechnology, Assam University, Silchar, Assam 788011, India

Abstract

Unequal usage of codons has been reported in a large number of organisms and the number is growing day by day. Influenza a virus (IAV) has been responsible for a number of epidemics as well as pandemics over the years causing high mortality and morbidity among humans and several animals. This study attempts to investigate the usage of codons among six major IAV subtypes that have been found to infect a range of hosts including humans. Codon usage bias (CUB) of *ha* gene was analysed for six IAV subtypes namely H1N1, H1N2, H3N2, H5N1, H7N7 and H9N2 in human, swine and avian hosts using various parameters namely relative synonymous codon usage (RSCU), codon adaptation index (CAI) etc. The study revealed lower bias in codon usage as reflected by higher Nc values (46.5-52.6). Overall GC content of the subtypes ranged from 40.6 to 43.8. The preferred codons ended with nucleobase A. Eleven amino acids were encoded by codons ending with A at 3rd position. However, the two-fold degenerate codons showed a tendency of using T at the 3rd codon position. From dinucleotide analysis it was evident that AA was the most preferred dinucleotide while CG the least preferred. Codon usage bias in IAV subtypes was low. However, the subtypes showed similar preference for the codon encoding a particular amino acid. Certain amino acids *viz. phe, pro, arg, thr, lys, ala, glu and gly* showed preference over the same corresponding codon across the subtypes.

Keywords: Influenza A virus, codon usage bias, dinucleotide, effective number of codons, codon adaptation index

LIPOSOMAL TARGETING TO TUMOR CELLS

Soumya Dubey

Shri Ram Institute of Technology-Pharmacy, Jabalpur, M. P., India

Abstract

Liposomes have earned their reputation as 'smart' nanocarriers. Nanocarriers are particles with diameter of a size range that can be measured under nanometer scale. A liposome is a spherical vesicle having at least one lipid bilayer. As they are made up of the same material as our cell membrane, they can successfully deliver drugs to the target cell by merging with the cell membrane first and then releasing the incorporated drug to the desired site. Liposomes are referred as smart nanocarriers because of their ability to administer both hydrophilic and hydrophobic drugs. In recent years research has significantly developed in terms of liposomal systems with an improved drug delivery potential for cancer therapy. Subsequent work on liposomes has focused mainly on developing strategies for actively targeting tumor sites. It can be of three types, active targeting, passive targeting and intracellular and organelle targeting**.** Actively targeted liposomes are designed with the goal of reducing off-target effects by conjugating targeting moieties, such as small-molecule ligands, peptides or monoclonal antibodies, peripherally to liposomal drug delivery systems. In passive targeting, because of the leaky capillary basement membrane molecules cross the vessel wall since the lymphatic drainage in tumor vasculature is poor, small particles, such as liposomes, can accumulate, by the phenomena of enhanced permeability and retention effect. Intracellular delivery is multidrug resistance in cancer therapy. Liposomes need to cross the cell membrane barrier in order to deliver their cargo into the cytoplasm. The site of action could be the cytoplasm, nucleus, mitochondria or lysosomes.

Keywords: Liposomes, nanocarriers, tumor

PROTEIN EXPRESSION PREDICTED BY TRANSLATIONAL EFFICIENCY IN HUMAN GENES

Binata Halder, Himangshu Deka, Supriyo Chakraborty

Department of Biotechnology, Assam University, Silchar, Assam 788011, India

Abstract

Production and use of human proteins have important implications in sustaining life from various odds in the biological system as it underpins many important processes. Although rDNA technology has provided an insight towards the development of large amount of synthetic proteins from the same organism, but to obtain high/low expression of a transferred/target gene, it is worthwhile to find the association betweenthe determinants of protein coding sequences of the host organism to control the sequences from the organism in which the protein is to be produced. Twenty random coding sequences of human genome were retrieved from NCBI and these sequences were analysed by software based on PERL script. We estimated the nucleobase compositionsand the level of gene expression of these genes in *E. coli K12*genome. Using tRNA adaptation index (*tAI*),we predicted the possible effect of tRNA concentrations on codons and amino acids. *tAI* showed a strong relationship with various sequence determinants such as gene length,nucleobase properties, and amino acid properties. Significant correlation was found between tRNA concentrations and the synonymous codons of human genes in *E. coli K12* genome. Aromaticity-one of the amino acid properties was highly associated with *tAI*. The results support the inference that translation efficiency is directly influenced by tRNA levels in the cell. Thus, this analysis helps us to understand the evolution of coding sequences via the adaptation of their codons to the tRNA pool.

Keywords: tRNA adaptation index, amino acids

WHICH EVOLUTIONARY FORCES DICTATE CODON USAGE IN HUMAN TESTIS SPECIFIC GENES?

Monisha Nath Choudhury and Supriyo Chakraborty

Department of Biotechnology, Assam University, Silchar 788011, Assam, India
Email: supriyoch_2008@rediffmail.com

Abstract

Unequal usage of synonymous codons encoding an amino acid is termed as codon usage bias. Synonymous codon usage bias is an inevitable phenomenon in organismic taxa across the three domains of life, *i.e.* plants, animals and microbes. Here we report the codon usage pattern in human testis specific genes found in Y chromosome. Testis specific genes are associated with several dysfunctions, such as gonadal sex reversion, infertility, gonadoblastoma and non-syndromic hearing impairment. We used bioinformatic approaches to analyze codon usage bias in human testis specific genes. Highly significant negative correlation was found between ICDI and tAI ($r=-0.939^{**}$, $p<0.01$). Moreover, highly significant positive correlation between A% and A3% ($r=0.774^{*}$, $p<0.05$), T and T3% ($r=0.894^{**}$, $p<0.01$), GC% and GC3% ($r = 0.897^{**}$, $p<0.01$) suggest that mutation pressure played an important role in codon usage pattern of these genes. However, significant positive correlation between G and G3 % ($r=0.936^{**}$, $p<0.01$), G and C3 ($r=0.557$, $p>0.05$) but negative correlation between GC and T3 % ($r=-0.960^{**}$, $p<0.01$) indicate the role of natural selection on codon bias. Variation of codon usage pattern was also evident in different genes from principal component analysis (PCA). Codon usage bias in human testis specific genes is low. These genes are rich in GC content. Both natural selection and mutation pressure affect the codon usage bias in these genes.

Keywords: Codon usage bias, mutation pressure, natural selection

EFFICACY AND SAFETY OF *HIBISCUS ROSA SINENSIS* LEAVES FROM DIFFERENT SOLVENT EXTRACTS

R. Salfarina[1], M. S Muhammad Ashraf[1], M. N. F Mohd. Radzi[1], Zolkapli Eshak[1,2], Hasseri Halim[1]

[1]Department of Pharmacology and Pharmaceutical Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam Campus, 42300 Puncak Alam, Selangor, Malaysia [2]Imaging Centre, Faculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam Campus, 42300 Puncak Alam, Selangor
Email: salfarina2892@puncakalam.uitm.edu.my

Abstract

Application of plants in folk medicines resulted in many beneficial claims on the plants. This study is carried out to verify the interest and claims made towards the leaves of *Hibiscus rosa sinensis*. In this study, the *Hibiscus rosa sinensis* leaves were macerated with petroleum ether, ethyl acetate, acetone and methanol. Each extract were investigated for its efficacy against selected bacteria and cancer cells. The antibacterial activity was evaluated by broth microdilution assay. It was found that no antibacterial activity was observed towards *Escherichia coli* and *Pseudomonas aeruginosa* from all extracts. However, the ethyl acetate extract exhibited lowest MIC of 0.1 mg/ml against *streptococcus pyogenes*. The extract also showed antibacterial effect towards MRSA, *Streptococcus agalactiae* and *Klebsiella pneumoniae* with MIC values of 5 mg/ml. From the MTT assay, the acetone extract exhibited IC50 of 120µg/ml whereas methanol extract exhibited IC50 of 130 µg/ml following incubation with MCF 7 and HEP G2 cells, respectively for 24 h. The safety of the extracts was evaluated from its respond towards normal cell lines 3T3 and WRL68. The quantification of total phenolic content by Folin-Ciocalteu reagent and analysis of the extracts by both HPLC-PDA and LC/MS was carried out to tentatively identified compounds from the extracts. Although the IC50 and MIC values obtained from this study were indicative of the least *Hibiscus rosa sinensis* extracts activity in inhibiting the growth of bacteria and cancer cells, it is satisfactory to support its safety to be used in folk medicine.

Keywords: *Hibiscus Rosa,* maceration, HPLC, LC/MS, antimicrobial

WHICH EVOLUTIONARY FORCES DICTATE CODON USAGE IN HUMAN TESTIS SPECIFIC GENES?

Monisha Nath Choudhury, Supriyo Chakraborty

Department of Biotechnology, Assam University, Silchar 788011, Assam, India
Email: supriyoch_2008@rediffmail.com

Abstract

Unequal usage of synonymous codons encoding an amino acid is termed as codon usage bias. Synonymous codon usage bias is an inevitable phenomenon in organismic taxa across the three domains of life, *i.e.* plants, animals and microbes. Here we report the codon usage pattern in human testis specific genes found in Y chromosome. Testis specific genes are associated with several dysfunctions, such as gonadal sex reversion, infertility, gonadoblastoma and non-syndromic hearing impairment. We used bioinformatic approaches to analyze codon usage bias in human testis specific genes. Highly significant negative correlation was found between ICDI and tAI ($r=-0.939^{**}$, $p<0.01$). Moreover, highly significant positive correlation between A% and A3% ($r=0.774^{*}$, $p<0.05$), T and T3% ($r=0.894^{**}$, $p<0.01$), GC% and GC3% ($r = 0.897^{**}$, $p<0.01$) suggest that mutation pressure played an important role in codon usage pattern of these genes. However, significant positive correlation between G and G3 % ($r=0.936^{**}$, $p<0.01$), G and C3 ($r=0.557$, $p>0.05$) but negative correlation between GC and T3 % ($r=-0.960^{**}$, $p<0.01$) indicate the role of natural selection on codon bias. Variation of codon usage pattern was also evident in different genes from principal component analysis (PCA). Codon usage bias in human testis specific genes is low. These genes are rich in GC content. Both natural selection and mutation pressure affect the codon usage bias in these genes.

Keywords: Codon usage bias, mutation pressure, natural selection

FORMULATION AND PHYTOPHARMACOLOGICAL ACTIVITY STUDIES OF FRESH JUICE OF *ACACIA ARABICA* STEM AND LEAVES FOR THE TREATMENT OF VARIETY OF DENTAL PROBLEMS

Sushilkumar A. Shinde[a]*, Vijaykumar M. Kale[b], Amit a. Khobragade[c], Sachin S. Bute[d]

[a,b,c]MUP'S College of Pharmacy (B. Pharm) Degaon, TQ-Risod,DIST-Washim 444506, Maharashtra State, India, [d]J. L. Chaturvedi College of Pharmacy, Nagpur

Abstract

It is well known that use of plant material for oral healthcare and treatment of periodontal disorder is common in many cultures and many of such remedies are very effective with respect to long term health. From literature review, it is came to know that *Acaciaarabica* stem is used as chewing stick and claimed to be useful for health of gum. The objective of the proposed study is to perform the phytochemical and pharmacological studies on the fresh juice of babul stem and leaves and convert the dried fresh juice to a suitable formulation. Phytochemical tests suggest presence of carbohydrates, steroids, tannins and flavonoids in leaf and stem juice both. Leaf juice at the dose of 200 mg/kg bodyweight was found to be very effective in imparting analgesic effect. In the anti-inflammatory studies leaf juice at the doses of 50, 100 and 200 mg/kg body weight was effective to reduce inflammation. The activity of leaf juice was more than that of stem juice but both can be claimed to have analgesic and anti-inflammatory activity. The activity may be due to presence of tannins, steroids and flavonoids. The dry juice was incorporated into a mouthwash formulation at 1% leaf juice, 1%s tem juice and 1%leaf and stem juice both of which formulation no. 3 with leaf and stem juice 1% both was better in taste, odour and colour.

Keywords: Anti-inflammatory, analgesic, mouthwash, *Acacia arabica*

HEPATOPROTECTIVE ACTIVITY OF LEAVES EXTRACTS OF CARISSA CARANDAS LINN

Ajay Shukla[1], C. P. Jain[1], A. P. Jain[2]

[1]Mohan Lal Sukhadiya University, Udaipur, [2]Guru Ramdas Khalsa Institute of Science and Technology (Pharmacy) Jabalpur M. P.
Email: ashukla1007@gmail.com

Abstract

The Hepatoprotective activity of leaves of *Carissa carandas* linn against carbon tetra chloride induced hepatotoxicity in albino rats was determined. The leaves were collected and dried under shade followed by crushing. The extraction of crushed powder involve the maceration by using methanol and acetone (w/v 1:3) solvent and concentrated to dry mass by using rotary vacuum evaporator. Dark green waxy residues (leaves) were collected separately. The different parameter of evaluation was taken such as histopathological studies, total bilirubin, direct bilirubin, SGPT and SGOT etc. The liver section of animal which was treated with methanol and acetone (w/v 1:3) extract clearly shows the normal hepatic cells and compared with Silymarin treated group of animals. The result suggests that the methonolic extract of leaves of Carissa carandas linn possess a significant role as hepatoprotective activity.

Keywords: *Carissa Carandas*, hepatoprotective, carbon tetra chloride

ALPHA-GLUCOSIDASE AND ALPHA-AMYLASE ENZYMES INHIBITORY ACTIVITY OF *KOLAKHAR:* A TRADITIONALLY USED LOCAL SODA OF ASSAM

Pallab kalita[*a], Chandi Charan kandar[b], Biplab Kumar Dey[a]

[a]Institute of Pharmacy, Assam down town University, Guwahati, Assam, India, [b]Institute of Pharmacy Jalpaiguri, Department of Pharmaceutical Chemistry, Jalpaiguri, Pin 735101,W. B, India.

Abstract

Kolakhar is a locally prepared herbal soda of Assam, which is mainly used as a food additive. There are two main enzymes alpha-glucosidase and alpha-amylase, playing a major role for carbohydrate digestion. After inhibiting these two enzymes, the post prandial glucose level will be reduced. To manage of blood glucose level, these approaches may be adopted. The aim of the present study was to investigate the *in vitro anti diabetic* activity of traditionally prepared kolakhar. The result suggests that due to the presence of biological compounds, the concentrated *kolakhar* product showed medicinal value like anti diabetic activity. The concentrated product of kolakhar exhibit the dose-dependent increase in inhibitory effect on alpha-glucosidase (up to 86.4%) and alpha-amylase enzyme(up to 91.7%). Above study proves that *kolakhar* having the *in vitro* anti diabetic activity. After proper scientific investigation on traditional *khar* of Assam, new finding may be come out.

Keywords: *Kolakhar*, Assam, diabetes, alpha-glucosidase, alpha-amylase enzyme

NANOPARTICLE-BASED TARGETED DRUG DELIVERY

Priyanks Yadav,* Madhu Gupta, Vikas Sharma

Shri Rawatpura Sarkar Institute of Pharmacy, Datia, M. P., India
Email: vikassharma15@gmail.com

Abstract

Nanotechnology could be defined as the technology that has allowed for the control, manipulation, study, and manufacture of structures and devices in the "nanometer" size range. These nano-sized objects, e. g., "nanoparticles", take on novel properties and functions that differ markedly from those seen from items made of identical materials. The small size, customized surface, improved solubility, and multi-functionality of nanoparticles will continue to open many doors and create new biomedical applications. Indeed, the novel properties of nanoparticles offer the ability to interact with complex cellular functions in new ways. This rapidly growing field requires cross-disciplinary research and provides opportunities to design and develop multifunctional devices that can target, diagnose, and treat devastating diseases such as cancer. Nano delivery systems hold great potential to overcome some of the obstacles to efficiently target a number of diverse cell types.

Keywords: Nanoparticles, drug delivery, cancer therapy, quantum dots

USE OF NATURAL MEDICINES INSTEAD OF ARTIFICIAL DRUG

Harsha Jalori

Asst. Professor (Physics), Govt. Benazeer College, Bhopal
Email: Jalori.harsha@gmail.com

Abstract

Natural products are the active components not only of the most tradional medicines but also many modern medicines. Natural product covers the field of Herbal medicine, Organic chemistry and pharmaceutical Science. Natural products are normally either of prebiotic sources or originate from microbes, plants or animal sources. Treating illness which employ no surgery or artificial drugs that uses in the fasting, special diets, massage, to contribute the usual therapeutic developments are called natural medicine.

In the present paper I am discussing various natural medicines for curing various diseases such as allergies, asthma, arthritis, migraine, irritable bowl syndrome, rheumatoid, cancer etc. For example 90% of the arthritis patients uses alternative therapies such as natural medicine.

Keywords: Natural medicines, artificial drug

COMPARATIVE LC-MS STABILITY INDICATIND ASSAYS OF ONDANSETRON HYDROCHLORIDE/NALOXONE HYDROCHLORIDE AND METOCLOPRAMIDE HYDROCHLORIDE/NALOXONE HYDROCHLORIDE USED IN PALLIATIVE CARE

Naser F. Altannak

Assistant Professor, Department of Pharmaceutical Chemistry Faculty of Pharmacy, Kuwait University, P. O Box 23924, Safat, 13110 Kuwait
Email: Dr_altannak@hsc.edu.kw

Abstract

A validated analytical method was developed to compare the compatibility and chemical stability of ondansetron hydrochloride/naloxone hydrochloride and metoclopramide hydrochloride/naloxone hydrochloride admixtures used in palliative care units at three different storage conditions (4˚C, 22 ˚C and 37 ˚C) for 192 h. Thus, a high performance liquid chromatography-mass spectrometry (LC-MS) analytical method was established to investigate the chemical stability of the combinations. Interestingly, metoclopramide hydrochloride and naloxone hydrochloride concentrations remain above 90% of their initial concentration under all storage conditions for 192 h, while ondansetron hydrochloride remain stable at 4˚C and 22 ˚C but it losses up to 15.03% of its initial concentration when stored for 192 h at 37 ˚C. In conclusion, metoclopramide hydrochloride and naloxone hydrochloride admixture is more stable and preferred to ondansetron hydrochloride and naloxone hydrochloride admixture under all storage conditions.

Keywords: Palliative care-liquid chromatography-mass spectrometry-high performance liquid chromatography, Ondansetron hydrochloride, Metoclopramide hydrochloride, Naloxone hydrochloride

CARRIER-BASED DRUG DELIVERY SYSTEM FOR TREATMENT OF ACNE

Krishna Pal Verma, Mrinal Aryan, Diksha Jat, Marina Philip Raju, Rupali Bagde

Lakshmi Narain College of Pharmacy, Kalchuri Nagar, Raisen Road Bhopal (M. P.)
Email: vermakrishnapal786gmail.com, mrinalaryan6@gmail.com

Abstract

Approximately 95% of the population suffers at some point in their lifetime from acne vulgaris. Acne is a multifactorial disease of the pilosebaceous unit. This inflammatory skin disorder is most common in adolescents but also affects neonates, prepubescent children, and adults. Topical conventional systems are associated with various side effects. Novel drug delivery systems have been used to reduce the side effect of drugs commonly used in the topical treatment of acne. Topical treatment of acne with active pharmaceutical ingredients (API) makes direct contact with the target site before entering the systemic circulation which reduces the systemic side effect of the parenteral or oral administration of drug. The objective of the present review is to discuss the conventional delivery systems available for acne, their drawbacks, and limitations. The advantages, disadvantages, and outcome of using various carrier-based delivery systems like liposomes, niosomes, solid lipid nanoparticles, and so forth, are explained. This paper emphasizes approaches to overcome the drawbacks and limitations associated with the conventional system and the advances and application that are poised to further enhance the efficacy of topical acne formulations, offering the possibility of simplified dosing regimen that may improve treatment outcomes using novel delivery system.

Keywords: Drug delivery system, treatment of acne

ISOLATION AND EVALUATION OF CHEMICAL CONSTITUENTS OF *CISSUS QUADRANGULARIS*

Shikha Jain[1*], Seema Kohli[1]

Pharmacy Department, [1]Kalaniketan Polytechnic College, Jabalpur 482001, India

Email: shikha.jain603@gmail.com

Abstract

Since ancient age nature has been a source of medicinal agents and many of the traditional drugs have been isolated from natural source. *Cissus quadrangularis*, is used in indigenious system of medicine like ayurveda, siddha, unani and homoeopathy. *Cissus quadrangularis*, a perennial climber widely used in traditional medicinal systems of India has been reported to posses bone fracture healing, antibacterial, antifungal, antioxidant, anthelmintic, antihemorrhoidal and anti inflammatory activities. Many active compounds have been isolated from the plants through various extraction method using different solvents and these are pharmacologically active. The isolated chemical constituents from *Cissus quadrangularis* extract, which plays major role including gallic acid derivatives, steroids, iridoids, flavonoids, stilbenes and triterpenes. There are various compounds in *Cissus quadrangularis* which posses anti inflammatory action. In the present work five compounds-(1) methyl gallate, (2) myricetin, (3) daidzein, (4) geniotein, (5) daucosterol has been selected for isolation. These new compounds showed potential medicinal values with anti-inflammatory properties with minimum side effects.

Keywords: *Cissus quadrangularis*, anti inflammatory, antioxidants

LC/ESI/MS FOR THE DETERMINATION AND IDENTIFICATION OF NATURAL PRODUCT: RELEVANCE TOOL

Rajesh Shukla*[1], Sushil Kumar Kashaw[2], Alok Pal Jain[3], Sant Ram Lodhi[3]

[1]Dept. of Pharmaceutical Science, Suresh Gyan Vihar University, Mahal, Jagatpura, Jaipur (RJ), [2]Dept. of Pharmaceutical Chemistry, Dr. H. S. Gour Central University, Sagar (MP), [3]Dept. of Parmacognosy, Guru Ramdas Khalsa Institute of Sci. and Tech. (Pharmacy), Jabalpur
Email: rajeshshukla2628@gmail.com

Abstract

LC-ESI-MS is a hyphenated mass spectrometry technique that combines the resolving power of HPLC separation with high mass accuracy of a mass spectrometer with electrospray ionization. Natural alkaloids, glycosides, flavonoids, saponins and sesquiterpenoids have been finally investigated since of their biological and physiological significances, as well as their shows potential for clinical uses. It is necessary to observe them or their metabolites in biological fluids for both pre-clinical studies and routine clinical uses. Natural product reports are delighted to present a themed collection focusing on the Mass Spectrometry of Small Molecules and Natural Products. The successful hyphenation of LC and MS, which was thought as "the bird wants to marry with fish", has been conducted widely in biological samples analysis. This present paper reviewed the feasibility of LC/ESI/MS techniques in the identification and quantification of natural products flavonoids, alkaloids, saponins, prorien, corbohydrate and sesquiterpenoids either biological fluids or extract of natural product, dealing with sample preparation, LC techniques, suitability of different MS techniques. Perspective of LC/ESI/MS was also discussed to show the potential of this technology. Here concluded that LC/ESI/MS is an extremely powerful tool for the analysis of natural products in biological samples. In this *emphasize*, we feature emerging chromatographic-mass spectroscopy and tools used by the natural product community and give a perspective of future directions where the mass spectrometry field is migrating towards over the next decade.

Keywords: LC/ESI/MS, natural product, chromatography, spectroscopy, LC-MS

SCREENING OF ANTAGONISTIC POTENT BACTERIA, *VIBRIO BRASILLIENSIS* FROM SURFACE OF SEA FAN CORAL

C. Chellaram

Dept. of Biomedical Engg., Vel Tech Multitech Chennai 600062. TN, India, Vel Tech University, Avadi. Chennai-600062 TN, India
Email: chellaramvtmt@gmail.com

Abstract

The objective of the present study is to isolate antagonistic potent marine bacteria from coral reefs against selected human pathogens. The present investigation was undertaken to isolate the bacteria from marine environment of Tuticorin coast of Tamilnadu and to examine their inhibitory action against selected human pathogens. Totally, 245 epibiotic bacteria were isolated from different coral samples collected at Tuticorin, Gulf of Mannar in South East Coast of India. All the bacteria were subjected to primary screening against Methicillin resisted *Staphylococcus aureus* (MRSA), *Klebsiella pneumoniae, Pseudomonas aeruginosa and Escherichia coli* and secondary screening were selectively carried out using well diffusion assay. The strain HC1 shows inhibition properties against *Staphylococcus aureus and E. coli*. Its phylogenetic position was in the genus Marinobacterium and the closest related species was *Vibrio brasilliensis* strain. The investigation shows that the epibiotic bacteria are a good source of antibacterial compound. This compound can be purified and further used as antibiotic drugs.

Keywords: Pathogens, marinobacterium, 16srRNA, *vibrio brasilliensis*

POROUS SILICON BASED MULTICOMPOSITE: INNOVATIONS TO APPLICATIONS

Maru Anusha*[1], Chauhan Kritika[1], Indurkhya Arpana[1], Khare Piush[1], Bhatnagar Punit[1]

[1]Sri Aurobindo Institute of Pharmacy, Indore (M. P)

Abstract

Advancements in the technology have revolutionized the pharmaceutical engineering designs and made it possible to have plentiful of drug delivery devices and systems. This advancement is due to the existing short-falls of dosage forms viz. delivery of single drug and unablity to maintain its desired therapeutic level in serum. Simultaneous delivery of multiple drugs via same carrier providesadvantages like synergistic effect along with suppression of drug resistance, and controlled drug delivery. Porous silicon could be a better alternate, as it can be used as drug delivery system, imagining tool, optics, biosensors, tissue engineering, cell culture, gas separation and microelectronics. It has also been found to be biodegradable and biocompatible. The multi composites possess a size range of less than 100 nm which is an added advantage. The main aim of the presentation is to give overview about porous silicon, its fabrication and versatile pharmaceutical applications.

Keywords: Pharmaceutical engineering, Co-delivery, porous silicon, biodegradable, biocompatible.

SYNTHESIS AND BIOLOGICAL EVALUATION OF SOME NOVEL 1,3,4-OXADIAZOLES TO OVERCOME ANTIMICROBIAL RESISTANCE

Harish Rajak[a,*], Avineesh Singh[a], Vijay K Patel[a], Deepak K Jain[a], Preeti Patel[a], Prabodh K Sharma[b], Ajay K Sharma[c]

[a]Institute of Pharmaceutical Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur 495009, (CG) India, [b]Institute of Pharmaceutical Sciences, Kurukshetra University, Kurukshetra 136119, (Haryana) India, [c]Department of Pharmacy, G. S. V. M., Medical College, Kanpur 208002, (UP) India
Email: harishdops@yahoo.co.in

Abstract

The antimicrobial resistance is an increasingly thought provoking challenge to global public health requiring urgent action. The development of resistant strains is a natural instance that occurs when microorganisms replicate themselves erroneously or when resistant traits are interchange between them. The use and misuse of antibiotics speed up the appearance of drug-resistant strains. The antimicrobial activities of the synthesized 1,3,4-oxadiazoles were evaluated using disk diffusion method. The structures of the test compounds were elucidated using elemental analysis, IR and ^{1}H-NMR spectroscopy. The *in-vitro* antimicrobial activity of test compounds were determined against the Gram-positive bacteria *Staphylococcus aureus* and *Bacillus subtilis*, the Gram negative bacteria *Proteus mirabilis* and *Pseudomonas aeruginosa*, the fungal strain *Aspergillus niger* and the yeast like pathogenic fungus *Candida albicans* by disk diffusion. Some of the compounds demonstrated noticeable antibacterial and antifungal activities. The effectiveness of the compounds as antifungal was found to be lesser when compared to their antibacterial activity. In conclusion, The promising result obtained during antimicrobial evaluation indicates that 1,3,4-oxadiazoles can be explored for their potential antimicrobial properties. The efforts were also made to establish structure activity relationship among the synthesized oxadiazole analogues.

Keywords: 1,3,4-oxadiazole, antimicrobial, synthesis, drug resistance

RECENT UPDATE ON DEVELOPMENT OF PULSATILE DOSAGE FORM

Alankar Shrivastava, Atul Kumar Singh

Pharmacy Department, Institute of Biomedical Education and Research, Mangalayatan University, Beswan, Aligarh, Uttar Pradesh, 202146

Abstract

The pulsatile drug delivery systems are beneficial for drugs having chronopharmacological behavior. These systems are designed according to the circadian rhythm of the body. The principle rationale for the use of pulsatile release is for the drugs where a constant drug release, i.e. a zero-order release, is not desired. The release of the drug as a pulse after a lag time (period of no drug release) has to be designed in such a way that a complete and rapid drug release follows the lag time. Pulsatile systems are therefore known to deliver the drug at the right site of action at the right time and in the right amount, thus providing spatial and temporal delivery and increasing patient compliance. Pulsatile drug delivery offers the following advantages: (i) extended daytime or nighttime activity, (ii) reduced side effects, (iii) reduced dosing frequency, (iv) reduction in dose size, (v) improved patient compliance, and (vi) lower medication costs due to the reduced dosing. In addition to the use in these disorders, pulsatile drug delivery may be beneficial for drugs with an extensive first pass metabolism as well as to target drugs to a specific site within the gastrointestinal tract. The presented paper highlighted recent research related to pulsatile dosage form development and their advantages.

Keywords: Pulsatile drug delivery system, Circadian rhythm, delivery, tablet, bioavailability

CANCER STEM CELLS: A NOVEL APPROACH FOR FUTURE

Durgesh Nandan Shukla, Rajnish Kumar Patel, Akhilesh Gupta, Gaurav K. Saraogi, A. K. Singhai

Lakshmi Narain College of Pharmacy, Bhopal (M. P.)
Email: dnshukla20@gmail.com, rajnishkumarpatel123@gmail.com

Abstract

Despite of recent advances in the treatment of cancer, the clinical outcome is yet far away from expectation. Providing innovative adult stem cell therapies for neurodegenerative disorders is developing a new technology that uses the patient's own bone marrow to treat diseases such as Parkinson's disease, Amyotrophic Lateral Sclerosis and Spinal Cord Injury.

Despite these, use of stem cells in immune-modulation or reconstitution is one of the method used for decades in cancer therapy stem cells have self renewal with high replicative potential in multineage differentiation capacity. Cancer stem cells (CSCs) are cancer cells (tumor or hematological cancer) that possess chracterstatics associated with normal stem cell type, specifically the ability to give rise to all cell type. CSCs generate tumor through the stem cell that self-renew and differentiate into multiple cell type, such cells are proposed to persist in tumors as a distinct population and cause relapses and metastasis by giving rise into new tumor. The cancer stem cells are now considered as the back bone in the development of the cancer. Their role in carcinogenesis and its implications would bring us a step forward in the development of possible new cancer treatment option in future with NDDS approach.

Keywords: Stem cells, cancer, novel drug delivery, tumor

LINKING DRUG DEVELOPMENT WITH TRANSLATIONAL RESEARCH

Neha Shukla, Vikas Jain, S. C. Mahajan

Department of Pharmaceutics, Mahakal Institute of Pharmaceutical Studies, Ujjain, 456664, Madhya Pradesh, India

Abstract

Translational research aims to make findings from basic science useful for practical applications that enhance human health and well being. In the pharmaceutical science, it aims to translate innovations by basic research to medical practice and meaningful health outcomes. The main aim of the review deals with the fact to enlighten translational research as a key component in stepping forward practical approach to enhance drug delivery system. The review moves with the therapeutic innovation, modular work, challenges and opportunities for future. The review concluded with the opinion in a way of optimizing potential of translational work for successful drug development.

Keywords: Translational research, Drug development, Therapeutic innovation, Modular work

INSULIN: A PATIENT'S NON COMPLIANCE DRUG NOW EVIDENTLY COMPLIABLE VIA PULMONARY ROUTE

Devendra Kumar Sen, Rajesh Shukla, Alok Pal Jain, Gopal Rai

Guru Ramdas Khalsa Institute of Science and Technology (Pharmacy), Jabalpur (M. P.)
Email: devendrasen0110@gmail.com

Abstract

Diabetes being a disorder now probes to be renowned as a deadly disease as per the complications caused during the various phases of diabetes and its problems generated as per the case evident. According to the World Health Organization (WHO), the global prevalence of diabetes is expected to reach 336.0 million by the year 2030. What actually is prevailing the disease? It's just the mindset of a subject suffering from it, which is psychologically inbuilt to be the incompliance for the procured drug available which may be in an intramuscular, subcutaneous or transdermal form. The patient directly or indirectly withdraws to not to take the drug due to its skilled application via syringical application or operate-able one. But if the suspect forces himself to do so then also sometimes the wounds create a bad impression to be cared more cautiously. A prospective solution for this problem is to change the dosage form and also to work on such a dosage form which may help the drug (insulin) to be administered not only without degradation but also with the non-harming, non-tedious, non-complicating and also patient friendly nature. Such a substitute is of the inhalation insulin in place of the other forms. As pulmonary route, also ensures the non degradable delivery of insulin mimicking the actions produced by the other forms. Thus, making such a change may strengthen the fight against diabetes and its complication.

Keywords: Insulin, diabetes, aerosol, pulmonary route

ROBOTIC PHARMACIST–A NEW ERA IN PHARMACY

Ketan Sharma, Ritu Priya Mahajan, S. C. Mahajan

Mahakal Institute of Pharmaceutical Studies, Ujjain, 45666, Madhya Pradesh, India

Abstract

Robotics is the science and technology of robots, and their design, manufacture, and application. In the world of pharmaceuticals, there is a vital role for robotics to play in the complicated processes of research and development, production, and packaging. Justification for robots ranges from improved worker safety to improved quality. Speeding up the drug discovery process is another benefit of robotics. Industrial robotics for pharmaceutical applications has a bright future. Due to heavy rush at the counters in hospitals and nursing homes in India, one should be ready to welcome robot pharmacists in future when these are likely to reach the pharmacies in India in years to come. Experts say that robot pharmacists are just the next step in automating healthcare. The benefits of automated pharmacy systems are substantial & would make pharmacist's workload immeasurably easier. Pharmacists are drug experts and the physical part of their workload can be replaced by robots. Experts are of the opinion that the robotic system is not meant to replace pharmacist's indispensible role all together but to reduce human errors and cutting costs. However, industrial robotics manufacturers face several challenges in their effort to establish themselves in pharmaceutical applications. Key among these is the incompatibility of their controller software with existing installed equipment.

Keywords: Robotics, automating healthcare, robot pharmacist, industrial robotics, automated pharmacy system

GC-MS BASED INVESTIGATION OF METABOLITES OF *MITRAGYNA PARVIFOLIA* (ROXB.) KORTH LEAF AND ITS NEUROPROTECTIVE AND ANTIDIABETIC POTENTIAL

Sainiara Begum[1,2], Archana Banerjee[2], Bratati De[1]

[1]Phytochemistry and Pharmacognosy Research Laboratory, Centre of Advanced Study, Department of Botany, University of Calcutta, 35 Ballygunge Circular Road, Kolkata 700019, India, [2]Department of Botany, Surendranath College, 24/2 Mahatma Gandhi Road, Kolkata 700009, India
Email: sainib_2008@yahoo.com

Abstract

The objectives of the present study were to assess the neuroprotective and anti-diabetic potential of extract/fractions of *Mitragyna parvifolia* (Roxb.) Korth leaves and to analyze the metabolite profile using Gas Chromatography and Mass Spectrometry (GC-MS) based metabolomics approach. The methanolic extract (ME) of the dried leaf powder was again subjected fractionation. α-Amylase and α-glucosidase was used for evaluation of antidiabetic potential. Acetylcholinesterase was used to assess the neuroprotective potential. Metabolite profiling was performed using GC-MS. ME showed better inhibitory activity than its ethyl acetate (EA) fraction for all the enzymes. Total phenol content and total flavonoid content were also higher in ME than EA. Total 34 compounds in ME and 20 compounds in EA were detected through GC-MS analysis. 3,4-dihydroxybenzoic acid, quinic acid, 4-hydroxycinnamic acid, gallic acid, chlorogenic acid, epicatechin and catechin were found in both the extracts. Some different types of sugar, organic acids and fatty acids also traced though amino acid was not found in EA. From the results it can be inferred that methanolic extract has significantly better activity than that of ethyl acetate fraction, in all aspects. Presence of more no of individual metabolites and their total contents suppose to contribute for higher activity in ME.

Keywords: *Mitragyna parvifolia,* α-amylase, α-glucosidase, acetylcholinesterase, metabolites, GC-MS

NANOTECHNOLOGY-BASED APPROACHES IN ANTICANCER RESEARCH

Ajay Kumar Lowanshi, Murtaza Ziya, Manushree Pachori, Ankita Raikwar, Babli Sitare, Aashish Joshi, Dr. Jitender Malik

Lakshmi Narain College of Pharmacy, Kalchuri Nagar Raisen Road, Bhopal (M. P.), 462021
Email: ajaykumarlowanshi@gmail.com

Abstract

Cancer is a highly complex disease to understand, because it entails multiple cellular physiological systems. Despite impressive advances in cancer biology, it is the leading cause of death worldwide and remains a challenge. There are over 200 different types of cancer reported all over the globe. In 2008, approximately 12.7 million cancer cases were reported, causing approximately 7.6 million cancer deaths, out of which 64% of the deaths were reported from economically developing countries. The most common cancer treatments are restricted to chemotherapy, radiation and surgery. Moreover, the early recognition and treatment of cancer remains a technological bottleneck. There is an urgent need to develop new and innovative technologies that could help to delineate tumor margins, identify residual tumor cells and micrometastases, and determine whether a tumor has been completely removed or not. Nanotechnology has witnessed significant progress in the past few decades, and its effect is widespread nowadays in every field. Nanoparticles can be modified in numerous ways to prolong circulation, enhance drug localization, increase drug efficacy, and potentially decrease chances of multidrug resistance by the use of nanotechnology. Recently, research in the field of cancer nanotechnology has made remarkable advances. The present review summarizes the application of various nanotechnology-based approaches towards the diagnostics and therapeutics of cancer.

Keywords: Cancer, diagnosis, drug delivery, nanoparticle, nanotechnology, treatment

PHARMACY CARE AND OBESITY MANAGEMENT IN MIDDLE EAST EXPERIENCE: PHARMACIST POSITION

Masoud Khosravi, Payam Peymani, Kamran B Lankarani

Pharmacoepidemiology and Drug Safety Division, Health Policy Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Obesity is an important health concern in the entire world and also Middle East. Obesity plays a role as a key risk factor for many non-communicable diseases such as type 2 diabetes mellitus, hypertension and etc. so this health problem has high economic and social burden on health system. Pharmacists have major and effective position is associated with successful weight management in Middle East. We searched literature systematically to examining whether the interventions of pharmacists roles to improve care and treatment of obesity. Several scientific databases were searched systematically to identify articles investigating hospital pharmacists'. Inclusion criteria were English language, primary research papers and studies in which pharmacists contributed directly to patient care. Exclusion criteria were reviews, commentary, editorials. Then we organized discussion panel to conclude our experience from Iran and results of literature searches. We face by many aspects of obesity such as management, diet, exercise and drug were the pharmacist must have enough skill and knowledge about them. The most important obstacle to obesity counseling were lack of patient awareness and confident about pharmacists' and lack of pharmacist knowledge in some aspect of obesity. In addition obese patients sometimes are non-adherent to weight reduction regiment and they are not having enough compliance to pharmacist advice. In conclusion, it is necessary to introduce and award people about pharmacist's capacity about obesity care and also consider empowerment of pharmacist society about obesity management.

Keywords: Pharmacy care, obesity, management, middle east, pharmacist

STUDIES ON PHYTOCHEMICAL SCREENING, TOTAL PHENOL, TOTAL FLAVONOID AND ANTIOXIDANT ACTIVITY OF HYBANTHUS ENNEASPERMUS

[1]B. Janarthanam, [2]S. I Beema Jainab and [3]E. Sumathi

[1]Poonga Biotech Research Centre, Plant Biotechnology Division, Choolaimedu, Chennai 600094, Tamil Nadu, India, [2]Department of Plant Biology and Biotechnology, Justice Basheer Ahmed Sayeed College for Women, Chennai 600018, [3]National Centre for Nanosciences and Nanotechnology, University of Madras, Guindy Campus, Chennai 600025, Tamil Nadu, India

Abstract

The present study was performed to investigate the phytochemical screening, total phenol, total flavonoid and antioxidant activity of flower, leaf, stem extract of *Hybanthus enneaspermus*. The phytochemical analysis revealed the presence of active ingredients such as steroids, saponins, phenols, flavonoids, terpenoids, alkaloids and tannins in the flower extract of *H. enneaspermus* followed by leaf and stem extract. Total phenol and flavonoid contents were quantitatively estimated in which total phenol content recorded maximum in ethanolic flower extract (14.23 mg gallic acid equivalents (GAE)/g) and total flavonoid content recorded maximum in ethanolic flower extract (12.85 mg Quercetin Equivalents (QE)/g). The flower, leaf and stem extracts were evaluated for antioxidant activities by DPPH (1, 1–Diphenyl-2-picryl-hydrazyl) radical scavenging assay. Among the three parts with different solvents extractions, maximum antioxidant activity was found in the ethanolic flower extract (86.4 %) of *H. enneaspermus* followed by leaf (62.6 %) and stem extract (59.3%). The powerful antioxidant activity is attributed to the greater amount of phenol and flavonoid compound in the ethanol flower extract of *Hybanthus enneaspermus*.

Keywords: *Hybanthus enneaspermus,* phytochemical screening, total phenol, total flavonoid, antioxidant activity

COMPARATIVE ANTIOXIDANT ACTIVITY STUDY OF SOME NATURAL SPICES

Monallisha Mallick, Anindya Bose, Sangeeta Mukhi

Department of Pharmaceutical Sciences and Quality Assurance, School of Pharmaceutical Sciences, Shiksha O Anusandhan University, Bhubaneswar, Odisha, India
Email: monallishamallick202@yahoo.com

Abstract

The antioxidant activity, total phenolic and total flavonoid content of four natural spices namely fennel (fruits of foeneculum vulgare), fenugreek (seeds of trigonella foenum graecum), coriander (seeds of coriandrum sativum) and black pepper (Fruits of Piper nigrum) were investigated in this study. Methanolic extracts of the spices were used for the study and direct comparative evaluation of the datas from individual spices was done. For antioxidant assay DPPH (2, 2-diphenyl-1-picrylhydrazyl) scavenging activity study was performed using ascorbic acid as a standard antioxidant. TFC and TPC were calculated using standard quercetin and galic acid linearity plots. In *in vitro* antioxidant study the methanolic extracts of the condiments showed significant activity in DPPH method with appreciable IC 50 values in the range of 1 to 8 mg/ml for different spices. This study suggested that these spices can be used as rich sources of natural antioxidants which are helpful in targeting various diseases in body.

Keywords: Spices, flavonoid content, phenolic content, DPPH assay

ASSESSMENT OF VARIOUS PHARMACEUTICAL EXCIPIENT PROPERTIES OF NATURAL *MORINGA OLEIFERA* GUM

Rajkumari Thagele

Vedica College of B. Pharmacy, RKDF University, Bhopal, M. P., India
Email: pharmarajkumari@gmail.com

Abstract

Plant gums and mucilages are being used due to their abundance in nature, safety and economy. So in The present investigation was an effort to study the suitability of gum obtained from *Moringa oleifera* as tablet mucoadhesive polymer, disintegrant and binder. This property of the gum was evaluated and compared with standard polymers like Chitosan, HPMC for mucoadhesion. Sodium starch glycolate (SSG), crospovidone for disintegration. Xanthan gum, and starch for binder study. In this study gum isolated from trunk of *Moringa oleifera* was studied at different concentrations and conditions. The properties of *Moringa oleifera* gum were evaluated for solubility, loss on drying, total ash and acid in soluble ash, pH, angle of repose, bulk density, tapped density, carr's compressibility index and Hausner's ratio. The physicochemical properties of gum were characterized, by FTIR, DSC, and SEM. The gum disks were prepared for mucoadhesive study and evaluated for mucoadhesive strength, surface pH, swelling index. For disintegration study tablets were prepared by direct compression and wet granulation method with different concentration of gum and evaluated for disintegration time, wetting time. And for binding property the tablets were prepared with different concentration of gum as binder by wet granulation method, and evaluated for hardness, friability, and *in vitro* release profiles. Studies show that increasing concentration of *Moringa oleifera* gum decrease disintegration time in disintegration property study, and decrease % cumulative release in binder property study. Results obtained indicated that Moringa oleifera gum performed as good mucoadhesive polymer, disintegrating agent and binder.

Keywords: *Moringa oleifera*, gum, mucoadhesion, disintegration, binder

ANTIOXIDANT ACTIVITY OF A NEW SERIES OF BIS (BENZOTHIAZOLYL) PYRAZOLE HYDRAZONE DERIVATIVES

D. MUNIRAJASEKHAR

Synthetic and Medicinal Chemistry Research Lab, Vel Tech Research Park, Vel Tech University, Avadi, Chennai, Tamilnadu 600062, India
Email: chemmuni@gmail.com, dmunirajasekhar@veltechuniv.edu.in

Abstract

A series of new Bis (benzothiazolyl) pyrazole hydrazones (a-e) were prepared by using benzothiazolylpyrazoline carbaldehyde and benzothiazole hydrazones. All the newly synthesized compounds were evaluated for anti-oxidant activity by DPPH method. All the compounds shown moderate and good antioxidant activity compared to their standard drug Butylated Hydroxytoluene (BHT).

Keywords: Benzothiazole, pyrazole, hydrazones, antioxidant activity.

EFFECT OF DIFFERENT VISCOSITY GRADES OF HPMC MATRIX SYSTEM ON OCULAR PERMEATION OF DEXAMETHASONE FILM FORMULATION

Ashirbad Nanda, Arunima Pramanik, Debajyoti Das, Subrata Mallick

Department of Pharmaceutics, School of Pharmaceutical Sciences, Siksha 'O' Anusandhan University, Kalinganagar, Bhubaneswar 751003, Orissa, India

Abstract

The aim of this study was to investigate the effect of different viscosity grades of hydroxylpropyl methylcellulose (HPMC) on corneal permeation of dexamethasone from film formulations. This approach is supposed to overcome the limitations associated with nasolacrimal drainageandcorneal epithelial barrierto drug penetration. The ocular films were prepared using HPMC 5cps (H5), HPMCK100LVCR (H100L), HPMCK15M (HK15) and HPMCK100M (HK100) by solvent casting method. The difference in film thickness of all formulations was insignificant. Film composed of HK100 showed higher moisture content and moistureuptake compared to others. FTIR spectra revealed no majordrug-excipientinteractions in the films. DSC thermogram of the formulated films showed disappearance of endothermic melting peak of dexamethasone. Scanning electron microscopy demonstrated transformation of geometric drug crystals into nano wire form in the films and the wire size has been decreased with increasing the viscosity of HPMC. Films made of higher viscosity (HK100) showed more swelling index than other formulations as revealed by 6 h of swelling study. Complete erosion of H100L and HK15 films was noticed whereas, H5 and HK100 have shown 60 % and 40 % respectively after 6 h of swelling study. *In vitro* release and *ex vivo* permeation exhibited the increasing sustained effect with the increased viscosity of HPMC in the film. *In vitro* release was sustained from 90 to 55 % at 15 min whereas, 34 to 12 % and 88 to 57 % permeation was exhibited at 15 min and 6 h respectively. Permeation was majorly controlled by diffusion controlled mechanism($n = 0.32–0.49$). Exposure of films at 75 % RH/40 °C for 5 w has shown no significant change in molecular level as confirmed by FTIR and DSC.

Keywords: Matrix system, formulation, *in vitro* release, viscosity

COMPARATIVE STUDY OF ANTIOXIDANT ACTIVITY OF RESINS OF BOSWELLIA SERRATA ROXB. EX COLEBR., COMMIPHORA MUKUL (HOOKS EX STOCKS) ENGL., GARDENIA GUMMIFERA L. F. AND SHOREA ROBUSTA GAERTN

Smita Gaurea[#], Ujwala C. Bapat[#*], Alka Bapat[##]

[#]Department of Botany, St. Xavier's College, Mahapalika Marg, Mumbai 400001, Maharashtra State, India, [##]Seth GSMC, Parel, Mumbai 400012, Maharashtra State, India

Abstract

Resins are amorphous mixtures of essential oils, oxygenated products of terpenes and carboxylic acids and are secreted from specialized structures as exudates in a wide range of plants. They probably function as plant defences. Resins are insoluble in water but usually dissolve in alcohol, ether or carbon di sulphide and other solvents. The resins of *Boswellia serrata* Roxb. ex Colebr., *Commiphora mukul* (Hooks ex Stocks) Engl., *Gardenia gummifera* L. f. and *Shorea robusta* Gaertn. were selected for the study to evaluate their antioxidant activity. The resins of these plants have been used traditionally for treatment of various diseases like rheumatism, obesity, hyperlipidemia and skin ailments. The antioxidant activity assays performed were, free radical scavenging activity using DDPH proposed by Mothlanka *et al.*, total antioxidant capacity using phosphomolybdenum reagent described by Prito *et al.* and reducing power assay adopted by Oyaizu. As phenolics and flavonoids are known antioxidants, the antioxidant activity of these resins was correlated with their phenolic and flavonoid contents. Total phenolic and flavonoid contents were determined by the standard methods. All the resin samples exhibited antioxidant activity and presence of phenolics and flavonoids. The highest antioxidant activity and the total phenolic and flavonoid contents were observed in the resin sample of *Shorea robusta*. There was a positive correlation between the total antioxidant capacity and total phenolic and flavonoid contents in all the extracts. The IC_{50} values obtained, indicated maximum antioxidant potential for resin obtained from *Gardenia gummifera.*

Keywords: Resins, *Boswellia serrata*, *Commiphora mukul*, *Gardenia gummifera*, *Shorea robusta*, antioxidant activity, phenols, flavonoids

VARIOUS MEDICINAL USES OF *IPOMOEA CARNEA*PLANT

***Kaminee Sahu, Seema Kohli**

Department of pharmacy, Kalaniketan Polytechnic Collage, Jabalpur (M. P.), 482001
Email: Kaminisahu26@gmail.com

Abstract

The shrub *Ipomoea carnea*has been used traditionally for thousands of years. However, there are few scientific studies on this medicinal plant. The plant *Ipomoea carnea* belongs to family Convulvulaceae; commonly known as 'Morning glory'. Now a day the use of herbal medicines has increased because of their ability to treat different diseases without side effects. However, the effective drug delivery of herbal medicines has not still been achieved. The pharmacological activity of plant *Ipomoea carnea* with the help of qualitative data analysis method was conducted. The mature plant of *Ipomoea carnea* were collected and authenticated. *Ipomoea carnea* plant possess anti-bacterial, anti-fungal, anti-oxidant, anti-cancer, anti-convulsant, immunomodulatory, anti-diabetic hepatoprotective, anti-inflammatory, anxiolytic, sedative and wound healing activities. The survey based experimental results shows that *Ipomoea carnea* have various pharmacological activity of *Ipomoea carnea* have been reported previously but presently there is urgent need to focus on further development of new drug delivery system and a well planned systematic pharmacological studies.

Keywords: *Ipomoea carnea*, pharmacological activity, convulvulaceae

PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITIES OF THE FROND EXTRACTS OF *PTERIS SEMIPINNATA*LINN (PTERIDACEAE): A TRADITIONALLY USEDMEDICINAL PTERIDOPHYTE OF SOUTHERN ASSAM, INDIA

Abhijit Mitra[a], Manabendra Dutta Choudhury[a], Prakash Roy Choudhury[a], Gauri duttasharma[b], Anupam Das Talukdar[a,*]

[a]Ethnobotany and Medicinal Plant Research Laboratory, Department of Life Science and Bioinformatics, Assam University, Silchar 788011, Assam State, India, *Faculty, [b]Microbiology Laboratory, Department of Life Science and Bioinformatics, Assam University, Silchar 788011, Assam State, India
Email: anupam@bioinfoaus.ac.in

ABSTRACT

*Pterissemi pinnata*Linn.(Pteridaceae)is a traditionally used medicinal pteridophyte of Southern Assam, India, that is used for the treatment of hepatitis, enteritis, diarrhoea, snake bite, carbuncle and various inflammatory conditions. Qualitative phytochemical screening guided investigations of antioxidant as well as free radical scavenging activities of hexane, ethyl acetate, acetone and methanol extracts of the fronds of the plant have been made in this study. Preliminary phytochemical screening of the extracts was followed by quantification of Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) by following standard protocol. Antioxidant activities of the extracts were studied by using standard DPPH scavenging assay, reducing power assay, metal chelating assay, hydroxyl, superoxide and ABTS radical scavenging methods in different *in vitro* systems. The preliminary phytochemical screening results implicated the presence of phenolic and flavonoid compounds in all the prepared extracts. Alkaloids were found to be present in the ethylacetate, acetone and methanol extract of the fronds, whereas, saponin was found to be present in the acetone and methanol extract of the fronds. The methanolic extract of the fronds showed maximum phenolicas well as flavonoid content in comparison to the other extracts. Antioxidant potentiality of the said extracts was also found to be impressive and noteworthy. The decreasing order of the antioxidative power of all the extracts have also been to be similar to thatof TPC and TFC ofthe extracts. Therefore, the methanol extract of the fronds of the plant may be treated as a potential source of natural antioxidants.

Keywords: *Pterissemi pinnata* Linn., pteridaceae, phytochemical, phenolic, flavonoid, antioxidant, free radical

PHARMACOGNOSTIC, PHYTOCHEMICAL STANDARDIZATION OF AMRTADI CHURNA

Sangeeta Mukhi, Anindya Bose, Physicochemical

Department of Phannaceutical Analysis and Quality Assurance, School of Pharmaceutical, Sciences, Siksha O Anusandhan University, Bhubaneswar, Odisha, India
Email: sangeeta.mukhi22@gmail.com

Abstract

Amrtadi chuma, a classical Ayurvedic formulation is indicated for the management of *Pitabikara* (ulcer). Till date there is no standard method reported for its standardization. Hence, the present work was carried out to standardize Amrtadi churna to confirm its identity, quality and purity. Pharmacognostical and phyto-chemicai observations revealed the specific characters of all active constituents used in the preparation. The characteristic features observed in the microscopy of drug combination included-presence of trichomes, crystals, fibres, mesocarp parenchymatous cell, cork cells etc. Phytochemical analysis indicated presence of alkaloids, tannins, saponins, flavonoids, glycosides and steroid. The physicochemical evaluations of the churna were also performed to establish standard reference values of these parameters. On the basis of these observations and experimental results, the study may be used as quality control of the product Amrtadi churna. Further studies may be carried out on Amrtadi churna based on identification and quantification of active ingredients with the help of various biomarkers.

Keywords: Amrtadi churna, phannacognosy, phytochemistry, physicochemical

THALIDOMIDE-THE WONDER DRUG: IMPLICATIONS IN ORAL MUCOSAL LESIONS

Shamimul Hasan[1*], Shazina Saeed[2], Arpita Rai[1], Ansul Kumar[3]

[1]Department of Oral Medicine and Radiology, Faculty of Dentistry, Jamia Millia Islamia, New Delhi, India, [2]Department of Human Genetics, University of Pittsburgh, USA, [3]PGIMER Dr. RML Hospital, New Delhi, India

Abstract

Thalidomide, a glutamic acid derivative, was initially used as a hypnosedative and antiemetic drug for motion sickness in pregnant females during the late 1950's in Germany. However, the drug was subsequently withdrawn from the market due to its association with world-wide teratogenic effects (sea limbs or phocomelia). The drug regained interest in the mid 1960's after dramatic therapeutic response in skin lesions of erythema nodosum leprosum (ENL). Since then, many studies have shown that thalidomide has reimerged as a treatment modality in disorders with autoimmune and inflammatory basis. Several conducted studies have demonstrated the new therapeutic indication of this drug in various muco-cutaneous disorders. The spectrum of therapeutic potential of thalidomide in oral mucosal lesions has been explored in severe aphthous stomatitis, Behcet's syndrome, erosive lichen planus, severe apthous ulcers in human immunodeficiency virus (HIV) infection, oral chronic graft-versus-host disease, oral crohn's disease, orofacial granulomatosis and various malignancies. The drug currently holds a investigational new drug status in the United States. Thalidomide is a versatile promising drug with many biological effects and potential for effective use in various oral mucosal diseases, either alone or as adjuvant therapy. Adverse effects of congenital birth defects and sensory neuropathy remains the limiting factor of the drug. Serious consideration should be made and caution exercised, before, during and after starting the therapy.

Keywords: Thalidomide, immunomodulation, oral diseases, teratogenicity.

AN EFFICIENT ONE-POT SYNTHESIS, STRUCTURE, ANTIMICROBIAL, ANTIFUNGAL, AND ANTITUBERCULOSIS INVESTIGATIONS OF SOME NOVEL MANNICH PRODUCTS

Hitendra M. Patel*

Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar, Gujarat, India
Email: shreeniketan71@yahoo.in

Abstract

A highly improved one-pot procedure for the synthesis of novel Mannich products, which incorporate a bioactive quinoline nucleus, under catalyst, and solvent-free environment has been developed. The method allowed us to achieve the products in high yields without requiring a chromatographic separation. The structure of all new synthesis compounds was established based on elemental analysis, mass, ^{1}H NMR, ^{13}C NMR, IR spectral data. *In vitro* antimicrobial activity studies it revealed that all are active against Gram positive (*S. aureus, Streptococcus pyogenes*), Gram negative (*P. aeruginosa* and *Escherichia coli*), *M. Tuberculosis* $H_{37}RV$ bacteria, and fungus like *Candia albicans, A. Clavatus and Aspergillus niger*.

Keywords: Solvent-free**,** one-pot synthesis**,** reusable ionic liquid**,** 2,4-dihydroxybenzo-phenonene**,** mannich products

NUTRITIONAL CONNECTION OF ALZHEIMER'S DISEASE

Soumya Mishra, Vikash K. Mishra, Sushil K. Kashaw

Dr. H. S. Gour. University, Sagar MP, India

Abstract

Alzheimer's disease is a devastating disease whose recent increase in incidence rates has broad implications for rising health care costs. Present study is based on theoretical studies of various research papers and review articles. It has been found that an excess of dietary carbohydrates, particularly fructose, alongside a relative deficiency in dietary fats and cholesterol, may lead to the development of Alzheimer's disease. Similarly, L-arg is attracting increasing attention as a regulator in neurogenesis and apoptosis. Many researchers show that L-arg is involved in different types of cell generation and apoptosis through the following major metabolic pathways. There is increasing evidence that lifestyle, including a diet rich in anti-inflammatory, and antioxidant and neuroprotective agents may reduce the risk of developing Alzheimer's. Another fact related to nutrition is, human brain represents only 2% of the body's total mass, but contains 25% of the total cholesterol which is required everywhere in the brain as an antioxidant, an electrical insulator (in order to prevent ion leakage), as a structural scaffold for the neural network, and a functional component of all membranes. Mediterranean diet nutrition, known primarily as a way to protect against heart disease, may reduce the incidence of Alzheimer's disease. This diet, along with others, may help prevent the development of Alzheimer's disease by possibly scavenging reactive oxygen species, strengthening the ability of neurons to protect themselves, and down regulating factors in the immune system called cytokines. Over time, the nutrition related responses lead to impaired glutamate signaling, increased oxidative damage, mitochondrial and lysosomal dysfunction, increased risk to microbial infection, and, ultimately, apoptosis. Present study is an effort to setup a connection between Alzheimer's disease moreover other neurodegenerative disorders like Parkinson's disease and there possible links with our daily life nutritional practice.

Keywords: Alzheimer's disease, anti-inflammatory, antioxidant, neuroprotective

ANTICANCER HERBAL DRUGS AND THEIR IMPROVEMENT THROUGH NOVEL DRUG DELIVERY APPROACHES

Vivek Shukla, Mukesh Kumar Singh, Nitu Kumari, Akshat Sharma

Lakshmi Narain College of Pharmacy, Kalchuri Nagar Raisen Road, Bhopal (M. P.)
Email: vivekshukladiscover@gmail.com

Abstract

Cancer is one of the most devastating diseases that involves various cellular and genetic alternations and globally is 2nd leading cause of death in humans. Alternative medicines and their by-products provide a positive hope to manage cancer. However, non-specific bio-distribution and targeting, less water solubility, poor oral bio-availability and low therapeutic efficacy limit the pharmacological properties of conventional anti-cancer herbal drugs. In this review an attempt has been made to discuss about the mechanism and therapeutic efficacy of twenty different anti-cancerous herbal drugs with focus on their best utility. Different techniques of novel drug delivery systems (NDDS) like nano-particles, phyto-complex, liposome, ethosome, nano-emulsion and microsphere have been discussed as potential tools to remove various constraints associated with these herbal drugs. Various important issues related with novel drug carriers like their generalized mode of action, their potential advantages over conventional drugs, future opportunities, technological challenges and possible steps to patch up the existing gaps have been discussed.

Keywords: Cancer, herbal drugs, novel drug delivery approaches

EFFECT OF COMBINATIONS OF TWEEN-80 AND SPAN-80 ON THE SIZE AND STABILITY OF CURCUMIN NIOSOMES

Masrina Mohd Nadzir*, Tan Wei Fen

School of Chemical Engineering, Engineering Campus, Universiti Sains Malaysia, 14300 Nibong Tebal, Penang, Malaysia
Email: chmasrina@usm.my

Abstract

The influence of the combination of non-ionic surfactants, Tween-80 and Span-80 at different ratio on the size and stability of curcumin niosomes was investigated. Initially curcumin was dissolved in chloroform and methanol (v/v= 3:1), followed by the preparation of niosomesby thin-film hydration method with the mole ratio of mixture of non-ionic surfactants: cholesterol of 2:1. Here, the studied ratios of Tween-80: Span-80 were 1:1, 1:9, 9:1, 2:3 and 3:2, with Hydrophilic-Lipophilic Balance (HLB) values of 9.65, 5.37, 13.93, 8.6 and 10.72, respectively. As expected, niosome barely formed at formulation with HLB value of 13.93. At high HLB, the molecule was hydrophilic and well hydrated, inhibiting the formation of a stable bilayer in solution. Before sonication, it was found that the formulation which has a higher Span ratio leads to larger niosome. The largest niosome size achieved from Tween-80: Span-80 ratio of 1:9 and 2:3 was 77.36 μm and 59.85 μm, respectively. On the other hand, for the ratio of 3:2, the largest niosomes formed before sonication was less than 50 μm. After sonication, the niosome size reduced to less than 35 μm for all formulations. In addition, curcumin niosomes produced from formulation with higher Span ratio exhibited significantly higher curcumin entrapment efficiency (EE%) compared to the niosomes with lower Span ratio. Storing the curcumin niosome at room temperature for 7 d showed that niosomes with the highest Span ratio have the smallest decreased in theEE%, indicating niosomesproduced using this formulation being most stable.

Keywords: Curcumin, niosome, non-ionic surfactant, tween-80, Span-80, characterization

LIPOSOMES AS CARRIERS OF CANCER CHEMOTHERAPY

[1]Mayur Hariyani*, [2]Rajesh Shukla, [1]Santram Lodhi, [1]Gopal Rai

[1]Guru RamdasKhalsa Institute of Science and Technology (Pharmacy), Jabalpur, M. P, [2]Dept. of Pharmaceutical Science, Suresh Gyan Vihar University, Mahal, Jagatpura, Jaipur (RJ)
Email: rajeshshukla2628@gmail.com

Abstarct

Liposome — microscopic phospholipids bubbles with a bilayered membrane structure — have received a lot of attention during the past 30 y as pharmaceutical carriers of great potential. More recently, many new developments have been seen in the area of liposomal drugs. Cancer therapy still being the principal areas of interest. Chemotherapy is a modality of cancer therapy that needs much improvement. Liposome and other lipid based drug delivery system have an advantage in this context. In terms of mechanism of action, tumor targeting has been the focus in liposome drug delivery. The recent development with longer circulation time has led to improve tumor targeting in animals. Liposomal formulation of more than a dozen antineoplastic have shown promise *in vitro* and in animal models. However Doxorubicin, Daunorubicin, and cytrabine, are in advanced stages in clinical testing in humans. Other mechanism of action such as release from drug depot formulation, heat triggered local drug release, and transfection of genetic materials, may prove to be useful in humans.

Keywords: Antineoplastic, phospho lipid, tumor, doxorubicin, cytrabine, danuorubicin

ANTIRETROVIRAL DRUGS INDUCED RASH–A REVIEW

B. R. Jaidev Kumar

Department of Clinical Pharmacy, JSS College of Pharmacy, SS. Nagar, Mysore 570015, TN, India
Email: jaidev.kumar9@gmail.com

Abstract

Patients suffering from HIV infections have a more risk of developing coetaneous reactions compared to general population. The occurrence of cutenaous reactions can vary from one individual to another individual in patients affected with HIV infection. Cutenaous adverse effects are commonly observed in HAART therapy. Rash is one of the most commonly observed hypersensitivity syndrome in antiretroviral medications. Nevirapine has got more risk of causing rash compared to other antiretroviral medications. The rash more commonly observed in antiretroviral medications such as Nevirapine, Delavirdine, Efavirenz, Abacavir, Amprenavir. Older research studies suggest that gender differences have been observed in different stages of HIV infection and its management, apart from gender differences tolerability of antiretroviral medications have been noticed in gender population. Close monitoring of antiretroviral medications is required in the initial stages of HIV infection as there will be more risk of causing adverse drug reactions till the patient tolerates. According to Dr. Philips there are three theories that can cause hypersensitivity symptoms of antiretroviral medications such as first theory reflects given drug or its metabolite can directly modify the activation of immune complexes followed by second theory tells that drug or its metabolite could alter the function of some cells involved in control of the immune system (ie CD 4 or CD 8 cells) and finally the last theory suggests that idiosyncratic hypersensitivity can be etiologically tied to the production of toxic metabolites that can act as hapten and bind to cellular macromolecules. One of the research work carried out in Nigeria had reflected that they had designed cohort study where patients diagnosed with HIV infection were enrolled between May 2006 to May 2009 and at least one follow up clinical visit after commencing antiretroviral medications between May 2009 and May 2010. The sample size of this research study were 4103 patients where 1453 were excluded from the analysis because they had no clinical visits in the observation period. Of the 2650 patients, 1374 (52%) were on zidovudine based regimen, 1223 (46%) on stavudine based regimen, 46 (1.7%) on tenofovir based regimen and 7 (<1%) on other regimen. Of the 13, 479 clinical visits, 10,084 (75%) were screened for an ADR and 114 (1.13%) visits reported an ADR. Patients receiving zidovidine antiretroviral drug combinations have 18% drug rash. The maculopapular type of rash is more commonly observed after HIV treatment. The time temporal relationship that can cause maculopapular rash will be between two and ten weeks after starting antiretroviral drug therapy. The maculopapular rash is not clearly known whether it can cause Steven Johnson Syndrome or Toxic Epidermal Necrolysis and it may take not less than two weeks to resolve after cessating offending antiretroviral drug. Allergic cutaneous effects will be commonly observed during first and third week of antiretroviral drug therapy which is characterized by severe pruritus on trunk. Some research studies have reflected that female have less tolerance than male while receiving antiretroviral drug combination containing nucleoside reverse transcriptase inhibitors. In conclusion, HIV Patients initiated with antiretroviral drug therapy during first few weeks should always be monitored for adverse drug reactions especially cutenaous reactions such as rash is more likely to happen. The mechanism behind the role of antiretroviral drugs gender toxicity needs to be closely evaluated. More research studies are required to carry out in this area to come out with clear information about gender difference toxicity caused by antiretroviral drugs.

Keywords: Rash, HIV, antiretroviral.

SILK FIBROIN-BASED NANOPARTICLES: A BOON FOR DRUG DELIVERY SYSTEM

Chauhan Kritika*[1], Maru Anusha[1], KharePiush[1], Indurkhya Arpana[1], Bhatnagar Punit[1]

[1]Sri Aurobindo Institute of Pharmacy, Indore (M. P)

Abstract

Silk fibroin (SF) is a protein-based biomacromolecule with excellentbiocompatibility, biodegradability and low immunogenicity. The development of SF-basednanoparticles for drug delivery have received considerable attention due to high bindingcapacity for various drugs, controlled drug release properties and mild preparationconditions. By adjusting the particle size, the chemical structure and properties, the modifiedor recombinant SF-based nanoparticles can be designed to improve the therapeuticefficiency of drugs encapsulated into these nanoparticles. Therefore, they can be used todeliver small molecule drugs (e. g., anti-cancer drugs), protein and growth factor drugs,gene drugs, *etc.* The paper reviews recent progress on SF-based nanoparticles, includingproperties, and preparation methods. In addition, the applications ofSF-based nanoparticles as carriers for therapeutic drugs have also been reviewed.

Keywords: Silk fibroin, nanoparticles, encapsulated, drug delivery

ETHNO-MEDICINAL PLANTS USED IN BIRTH CONTROL BY TRIBALS OF KOTA REGION OF RAJASTHAN

***Sulekha Joshi, Manisha Sharma**

***Department of Botany, Govt. College Kota 324001 (India), Department of Zoology, J. D. B. Girls,college Kota-32001 (India)**

Abstract

An extensive survey of Kota region of Rjasthan with special reference to Jawahar Sagar Sanctuary area was undertaken to document the traditional medicinal plants used for birth control by tribal communities. The uses of herbal contraceptives are well known by the ancient civilization and are still being followed by the tribal for the purpose of fertility control and to prevent pregnancy. The present study highlights 25 plant species that are being used for birth control and abortion by tribal communities including Bhil, Meena and Gujar residing in the Jawahar Sagar Sanctuary area, near Kota, Rajasthan. The discovery of some herbal contraceptives which are safe and sure is the need of present time. Traditional medicinal plants could prove effective in controlling our country's increasing population.

Keywords: Ethno-medicine, Jawahar sagar sanctuary, Tribal.

GOLD NANOPARTICLES: NEW APPROACH OF TARGETING

Sugam Singhai*, Vijay Mishra

Pharmaceutical Nanotechnology Research Laboratory, Adina Institute of Pharmaceutical Sciences, Sagar M. P.
Email: jainsugamsinghai@gmail.com

Abstract

Gold nanoparticles with diameters ranging roughly between 1 and 100 nanometers, are natural bridges between molecules and extended solids. Metal nanoparticles attract strong interest both because they open up a new field in fundamental science and because of their potential technological applications. They are convenient components for sub-wavelength optical devices for nonlinear optics for optical data storage for surface-enhanced spectroscopy and catalysis for biological labelling and sensing and even for cancer therapy. Nanotechnology is an anticipated manufacturing permanent coloration of value textiles. Various technology that allows the long-established trend polymer/gold nanocomposites display a high potential toward smaller, faster, cheaper materials and devices. for novel coatings and paintings. Gold nanoparticles (GNPs) are the most compatible used to enhance the performance of non-volatilen nanomaterial for preparation of engineered memory devices and low temperature printing nanoplatforms in smart sensing devices. Surface metal inks in electronics. GNPs as catalysts are Plasmon resonance property of GNP makes them most developed in novel usages. Gold nanoparticles suitable engineered nanomaterial for bioimaging, with diameter from 15-20 nm can be generated by biomedical therapeutics and biodiagnostic tools.

Keywords: Gold nanoparticles, drug targeting

PHYTOCHEMICALS ANALYSIS OF SEED EXTRACTS OF *CARTHAMUS TINCTORIUS* L.

Rashmi Dehariya[1], Ashwini Kumar Dixit[1]

Department of Botany, Lab of Pharmacognosy and Bionanotechnology, Guru Ghasidas University, Bilaspur, Chhattisgarh, India

Abstract

Carthamus tinctorius is a cultivated crop of Chhattisgarh, mainly harvesting for its seeds oil and for its leafy vegetable. The aim of the present study is to investigate the phytochemicals present in the seeds of *Carthamus tinctorius*. Solvent used were water, ethanol, methanol and pet ether. Phytochemical investigation shows that alkaloids, phenols and flavonoids were present in all the extract whereas saponins are not found in any extract. Terpenoids are present in pet ether, ethanolic and methanolic extract, glycosides are absent in pet ether extract only. Present findings provided the information about the presence of phytochemicals in the crude extract of plant seeds, useful in its application as medicaments.

Keywords*: Carthamus tinctorius*, phytochemicals, seed

ADVANCES IN NUTRACEUTICAL PREPARATION AND THEIR APPLICATIONS

Sudheer Vishwakarma, Sukhi Ram Kushwaha, Ravindra Kumar, Akshat Sharma

Lakshmi Narain College of Pharmacy, Kalchuri Nagar Raisen Road, Bhopal (M. P.), 462021
Email: sukhi143ram@gmail.com

Abstract

The term "Nutraceutical" defines the combination of "Nutrition" and "Pharmaceuticals". Nutraceutical can be defined as, "a food (or part of a food) that provides medical or health benefits, including the prevention and/or treatment of a disease." However, the term nutraceutical as commonly used in marketing has no regulatory definition.

We redefine the functional foods and nutraceuticals. When food is being cooked or prepared using "scientific intelligence" with or without knowledge of how or why it is being used, the food is called "functional food." Thus, functional food provides the body with the required amount of vitamins, fats, proteins, carbohydrates, etc., needed for its healthy survival. When functional food aids in the prevention and/or treatment of diseases and/or disorders other than anemia, it is called a nutraceutical. Thus, a functional food for one consumer can act as a nutraceutical for another consumer. Examples of nutraceuticals include fortified dairy products (eg, milk) and citrus fruits (eg, orange juice). Thus, nutraceuticals differ from dietary supplements in as they not only supplement the diet but should also aid in the prevention and/or treatment of disease and/or disorder.

The use of nutraceuticals, as an attempt to accomplish desirable therapeutic outcomes with reduced side effects, as compared with other therapeutic agents has met with great monetary success. The preference for the discovery and production of nutraceuticals over pharmaceuticals is well seen in pharmaceutical and biotechnology companies.

However, with all of the afore mentioned positive points, nutraceuticals still need support of an extensive scientific study to prove "their effects with reduced side effects." This can be achieved by the enactment of FIM proposed Nutraceutical Research and Education Act (NREA).

Keywords: Nutraceutical, Functional Food, Dietary Supplement, Macronutrients, Micronutrients, Prebiotics, Probiotics, Health promoters etc.

PHAMACOGONOSTICAL AND PHYTOCHEMICAL VALUES OF *HEDYCHIUM CORONARIUM* J. KOENIG AN ENDANGERED MEDICINE OF MADHYA PRADESH

Pooja Pachurekar[1], Ashwini Kumar Dixit[1]

Guru Ghasidas University, Department of Botany, Bilaspur, Chhattisgarh

Abstract

Hedychium coronarium J. Koenig is a perennial medicinal herb which is distributed throughout the world and used as traditional as well as modern medicine by most of the parts of the world. In central region of India it is distributed in Amarkantak region of Madhya Pradesh and Chhattisgarh. It contains various bioactive compounds including Volatile oils, Saponins, Flavonoids and Glycosides etc. These bioactive compounds made this herb as a valuable drug. This plant is used in treatment of tonsillitis, infected nostrils, tumor and fever, inflammatory and intense pain due to rheumatism etc. The essential oil extracted from leaves, flowers and rhizome of the plant have cercaricidal properties, molluscicidal activity, potent inhibitory action, antimicrobial activities, anti-inflammatory and analgesic effects. It is also valued for its anti cancerous, anti diabetic, antimalarial, indigestion, properties possessed by its various parts. Due to over-exploitation for extraction of drugs, *Hedychium coronarium* is rapidly disappearing from its natural habitat. So keeping in view the medicinal as well as economic importance and rate of disappearance of this plant, its conservation is needed. In Presented paper medicinal and other important properties and previous works on *Hedychium coronarium* will be described which gives us an idea about further investigation and its conservation.

Keywords: *Hedychium coronarium* J. Koenig, pharmacognosy, phytochemicals.

MULTIFUNCTIONAL NANOMEDICINES: AN INSIGHT VIEW

Abhijeet Tiwari,* Madhu Gupta, Vikas Sharma

Shri Rawatpura Sarkar Institute of Pharmacy, Datia, M. P., India

Abstract

The use of nanotechnology in drug delivery and imaging *in-vivo* is a rapidly expanding field. It has found wide spectrum of applications in the fields ranging from medicine, diagnostics, electronics, and communications. Currently used pharmaceutical nanocarriers, such as dendrimers, micelles, nanoparticles, polymeric nanoparticles, microspheres, and many of the nanocarriers particularly in the area of drug delivery, offer a wide variety of useful properties, such as longevity in the blood allowing for their accumulation in pathological areas particularly those with compromised vasculature; specific targeting to certain disease sites; enhanced intracellular penetration of nanomaterial with contrast properties allowing for the direct visualization of carrier *in-vivo*, and stimuli sensitivity allowing for triggered drug release from the carriers under certain physiological conditions. Special emphasis is placed on nanoplatforms that offer opportunities for multi-functionalization to allow for targeted stimuli-responsive and/or simultaneous strategic delivery of multiple drugs, genes, as well as the combination of therapeutic systems with image contrast enhancers. Moreover, the engineering of multifunctional nanocarriers with several useful properties can significantly enhance the efficacy of many therapeutic and diagnostic protocols. These novel materials operate at the nanoscale range and provide new and powerful cutting edge tools for imaging, diagnosis, and therapy.

Keywords: Nanotechnology, multifunctional nanocarriers, drug delivery, imaging agents, targeting

LIGANDAND STRUCTUREBASED INTEGERATED IDEAL PHARCOPHOREBASED DESIGNING OF NEW DUAL INHIBITORSOFSPLEEN TYROSINEKINASE (SYK) AND PHOSPHOIONOSITIDE-3-KINASE δ (PI3Kδ) ASPOTENTIAL THERAPEUTICSFOR AUTOIMMUNEDISORDERS

Maninderkaur*, Om Silakari

Molecular Modeling Lab (MML), Department of Pharmaceutical Sciences & Drug Research, Punjabi University, Patiala, 147002, India
Email: maninder.688@gmail.com

Abstract

Autoimmune disorders are regulated by more than single pathway involving numerous signaling molecules, thus contributes to its complex pathophysiology. Due to complex pathogenesis, it is very challenging to develop successful treatment strategies. The single-targeted agents are not desired therapeutics for such multi-factorial complex disorders. Considering the current need for treatment of such disorders, dual inhibitors of Syk and PI3Kδ have been designed using ligand and structure based molecular modeling strategies. Both these enzymes have been implicated in B-cell mediated autoimmune disorders. In the present study, individual pharmacophore models for Syk and PI3Kδ were developed rationally using datasets of 198 diverse Syk inhibitors and 129 diverse PI3Kδ inhibitors. On the basis of survival minus inactive, five top ranked hypot hesis were considered for 3D-QSAR analysis for both the enzymes. The best model for Syk (ADPR.14) and PI3Kδ (AAARR.45) were selected on the basis the highest value of Q^2_{test}. The selected models were then modified manually on the basis of e-pharmacophore models generated for highest active and clinical trial inhibitors for both Syk and PI3Kδ. The modified pharmacophores (APDRR.14) for Syk and (AAAHRR.45) for PI3Kδ were validated by calculating GH score and Enrichment factor. Both the validated models were employed for screening of PHASE database followed by docking based screening using respective proteins of both enzymes. The hits with pharmacophoric features of both the enzymes and displaying essential interaction with both proteins were further employed for pharmacokinetic properties calculation using Qikprop. The final hits with acceptable Qikprop parameters were analyzed for favorable MM-GBSA energy. The systematic ligand and structure based modelling strategies lead to 32 hits as dual inhibitors of Syk and PI3Kδ that can be further explored as therapeutics for autoimmune disorders.

Keywords: Kinase, autoimmune disorders, Syk, PI3Kδ, E-pharmacophore, MM-GBSA.

CARBON NANO TUBES–AN EMERGING APPROACH

[1]Nitesh Kumar Kurmi*, [2]Rajesh Shukla, [1]Santram Lodhi, [1]Gopal Rai

[1]Guru RamdasKhalsa Institute of Science and Technology (Pharmacy), Jabalpur, (M. P.), [2]Dept. of Pharmaceutical Science, Suresh Gyan Vihar University, Mahal, Jagatpura, Jaipur (RJ)
Email: rajeshshukla2628@gmail.com

Abstract

There are recent discoveries in the field of Pharmaceutical Technology which have indicated that after bringing down the materials in size range of 1-100 nm show unique electrical, optical, chemical and pharmaceutical properties. These Carbon nano tubes (CNTs) are useful for the different chemical analysis and its detection since it increases the detection sensitivity many times and thus displays a great role in the development of newer methodologies. Several application of these CNT's are due to its magnificent and outstanding properties but a drawback which is faced commercially is that these CNT's and CNTs based devices should be of consistent good quality and devoid of any impurity. Such requirement needs purification and regular sorting of Carbon nanotubes. The major contribution of Carbon Nano tubes (CNTs) is in the field of cancer treatment and drug delivery systems.

Keywords: Carbon nano tubes, drug delivery, cancer treatment

INTEGRATED PHARMACOPHORE AND DOCKING BASED DESIGNING OF DUAL INHIBITORS PHOSPHOINOSITIDE-3-KINASE ALPHA (PI3KA) AND MITOGEN ACTIVATED PROTEIN TYROSINE KINASE (MEK) INHIBITORS AS NOVEL THERAPEUTICS FOR CANCER

Navriti Chadha*, Haneesh Jasuja, Om Silakari
Email: chadha2389@gmail.com

Abstract

PI3K/Akt and Raf/MEK/ERK pathways have been implicated in pathogenesis of Cancer. In the light of above, the present study was targeted to the blockade of both the pathways by designing multi-targeted inhibitors against PI3Kα and MEK enzymes. For this purpose, statistically significant pharmacophore models for phosphoinositide-3-kinase (PI3Kα) and mitogen activated protein kinase kinase (MEK) were developed using PHASE of Schrödinger software. The pharmacophoric hypotheses thus generated were ranked on the basis of the survival *minus inactive* score and were subsequently used for 3D-QSAR analysis. The best 3D-QSAR models for PI3K*α* (AAHR.7) and MEK (ADHRR.4751) were selected on the basis of the highest value of Q^2. Both models were then employed for the screening of a PHASE database of 1.5 million molecules and subsequently docking simulations were performed with both PI3K*α* and MEK proteins. Finally, the hits possessing pharmacophoric features of both proteins as well as showing interactions with both the proteins were analyzed for pharmacokinetic profile by calculating their ADME properties. The dual inhibitors with good potency and pharmacokinetic features thus obtained can be promoted for the investigation in the treatment of various cancerous diseases.

Keywords: QSAR, pharmacophore, MEK inhibitors

TRANSFEROSOMES: AS TRANSDERMAL DRUG DELIVERY SYSTEM

Sonam Rai, Palak Patel, Jitender Malik

Lakshmi Narain College of Pharmacy, Bhopal (M. P.)
Email: sonamrai896@gmail.com, patelpalak896@gmail.com

Abstract

The transdermal route of drug delivery has gained great interest of pharmaceutical research, as it circumvents number of problems associated with oral route of drug administration. The major barrier in transdermal delivery of drug is the skin intrinsic barrier, the stratum corneum Among these strategies transferosomes appear promising. Transferosomes possess an infrastructure consisting of hydrophobic and hydrophilic moieties together and as a result can accommodate drug molecules with wide range of solubility. Transferosomes can deform and pass through narrow constriction (from 5 to 10 times less than their own diameter) without measurable loss. This high deformability gives better penetration of intact vesicles. They can act as a carrier for low as well as high molecular weight drugs e. g. analgesic, anesthetic, corticosteroids, sex hormone, anticancer, insulin, gap junction protein, and albumin.

Keywords: Transferosome, undeformable vesical, skin delivery, pharmacokinetic

DESIGN, SYNTHESIS AND CHARACTERIZATION OF SOME NEW SUBSTITUTED 1,2,4-TRIAZOLES DERIVED FROM ISONICOTINIC ACID HYDRAZIDES

Vaibhav Rajoriya[a], Varsha Kashaw[a], Rakesh Kumar Jain[a], Sushil kumar kashaw[b]

[a]Sagar Institute of Pharmaceutical Sciences (SIPS), Narsinghpur road, Sagar (M. P.) [b]DOPS, Dr. H. S. Gour Central University, Sagar (M. P.), India
Email: varshakashaw@gmail.com

Abstract

Objective of study was to design and Synthesis of some new substituted 1,2,4-triazoles derived from isonicotinic acid hydrazides and screened for antitubercular activity. A series of new substituted 1,2,4-triazoles; isonicotinic acid hydrazide derivative (1–28) were synthesized. Potassium dithiocarbazinate (1) was obtained from the reaction of isonicotinic acid hydrazide with carbon disulfide in basic medium (KOH) and converted into 4-amino-5-(pyridin-4-yl)-4H-1,2,4-triazole-3-thiol (2) by the treatment with hydrazine hydrate. The synthesis of the other compound was performed from the reaction of 2 with seven different benzaldehyde resulted in the formation of 4-[(substituted phenyl)-methylene]-amino-5-(pyridine-4-yl)-4H-1,2,4-triazol-3-thiol (3). The final compound synthesized from the reaction of 3 with four different acetanilide resulted in the formation of 4-[substituted phenyl)-methylene]-amino-3-(N-substitutedcarboxamidomethylthio)-5-(pyridine-4-yl)-4H-1,2,4-triazoles (4). The structures of the synthesized compounds (1-28) were characterized by IR, ^{1}H NMR, ^{13}C NMR, Mass spectroscopy and elemental method of analysis. IR data, ^{1}H NMR spectra, ^{13}C NMR spectra, Mass Spectra and elemental analysis indicates that 28 compounds were synthesized as proposed. In conclusion, their biological activity & study for toxicity are required.

Keywords: 1,2,4-triazoles, isonicotinic acid hydrazides, IR, ^{1}H NMR spectra, ^{13}C NMR spectra, mass spectroscopy.

NANOCARRIER-BASED TOPICAL DRUG DELIVERY: OPTIONS AND OPPORTUNITIES FOR THE TREATMENT OF SKIN DISEASE

Rishabh Patel,* Madhu Gupta, Vikas Sharma

Shri Rawatpura Sarkar Institute of Pharmacy, Datia, M. P., India

Abstract

Skin disorders will continue to cause complications in patients. At present, there is an expansion of research into dermatologic treatment due to a critical need for new treatment options to treat skin diseases. The skin itself provides a natural barrier against particle penetration for topical delivery. However, it also offers a potential approach for the delivery of therapeutics, especially in diseased skin and via the openings of hair follicles. Recent innovation might be achieved in the field of dermatological treatment with improvement in the dermal localization of bioactives into the affected skin region, via novel nanocarriers that deliver the drugs directly to the target cells. After application, these nanocarriers can penetrate through the stratum corneum into viable skin and accumulate at the target site. However, noteworthy uptake does occur after damage and in certain diseased skin. Skin-targeted topical delivery by means of nanosystems, in order to produce sustained release and maintain a localized effect, will result in an effective treatment of various life-threatening dermatological conditions. In addition, research continues into the interactions between novel particles, skin and skin lipid, and the influence of particle composition on drug distribution within the skin strata.

Keywords: Nanocarriers, skin, skin disorders, topical delivery

INVESTIGATION OF BIOLOGICAL ACTIVITY OF TAMRA BHASMA AND ITS STANDARDIZATION

Suchita Bhoyar[a]*, Ziyaul Haque[b], Mayuri Zalte[c], Priyanka Todkari[d]

[a]Department of Pharmaceutical Chemistry, IBSS College of Pharmacy Malkapur, 443102, Buldana, [b]Department of Pharmaceutical Chemistry, RSCP, Buldana 443001, [c]Department of Pharmaceutics, IBSS College of Pharmacy, Malkapur, 443102, Buldana, [d]Department of QA IBSS College of Pharmacy Malkapur, 443102, Buldana

Abstract

Tamra Bhasma is copper in its oxide form and used therapeutically as a source of copper. The label claim states that Tamra Bhasma is used as astringent, antispasmodic, antiseptic. It is used to treat painful dyspepsia and anaemia. The 4 marketed samples were taken and checked their compliance for hepetoprotective activity. The all four sample comply with the organoleptic characters and physicochemical characters except in limit test for heavy metals. All four samples comply with Traditional quality control test which were carried out by EKA, HRI, SMR and VAT. Quantitative estimation of copper by AAS revels that minimum 1.99% to 14.94% of copper is present in the formulations. SEM and XRD studies reveal that the variation in size and shape of crystals may be because of presence of excipients. Results of different formulations of tamra bhasma on serum parameters in paracetamol induced hepatic damage indicate the HRI>SMR>EKA>VAT. In the case of bhasma it has been thought that therapeutic activity is because of specific particles size and shape of main constituent. Thus we need to introduce test that can help in determining the particle size, shape and extent of crystallinity etc. So, it is proposed that test like XRD, and SEM should be introduced as the quality control test if any sample is not conforming to a particular pattern of crystallnity, particle size and shape it should not be released into the market.

Keywords: Bhasma, hepetoprotective, XRD, SEM

HERBOSOMES: A CURRENT CONCEPT OF HERBAL DRUG TECHNOLOGY

Vivek K Chouhan, Rupesh Pawar, Poornima Thakur, R. T. Paliwal*, Dr. G. K. Saraogi

Lakshmi Narain College of Pharmacy, Kalchuri Nagar Raisen Road, Bhopal (M. P.),
Email: poonnu.thakur@gmail.com

Abstract

Herbosome is a current concept in herbal drug technology that removes the limitations of the traditional drug delivery systems. Herbal medicines have been widely used all over the world since ancient times and by physicians and patients for their better therapeutic value as they have no or less side effects as compared with modern medicines. The Herbosome structures contain the active ingredients of the herb bounded to phospholipids. The molecular structure of phospholipid includes a water-soluble head and two fat-soluble tails. Because of this dual solubility, the phospholipid acts as an effective emulsifier. By combining the emulsifying action of the phospholipids with the standardized botanical extracts, the herbosome form provides dramatically enhanced bioavailability for lipid soluble drugs explained by faster and improved absorption in the intestinal tract. Herbosome technology has been effectively used to enhance the bioavailability of many popular herbal extracts and phytoconstituents including Ginkgo biloba, milk thistle, grape seed, green tea, hawthorn, ginseng etc. and can be developed for various therapeutic uses or dietary supplements. This method can enhance the rate and the extent of drug absorption across the lipoid bio-membrane, which has been found promising for effective and appropriate systematic delivery of drug.

Keywords: Herbal technology, Herbosomes, Novel drug delivery system, NDDS

CANCER THERAPY THROUGH HCA IX INHIBITORS: A PROSPECTIVE

Soumendra Banerjee* and Saurabh M. Verma

Department of Pharmaceutical Sciences and Technology, Birla Institute of Technology, Mesra, Ranchi 835215, Jharkhand, India

Abstract

Cancer is a leading cause of death in developed and developing countries. Carbonic anhydrase IX plays an important role in the pathogenesis of anticancer. Therefore, design of carbonic anhydrase IX inhibitors has received considerable attention. A systematic investigation of the anticancer activity on a structural basis was performed using molecular modelling tools. Docking studies of carefully designed dataset of benzthiazole derivatives was carried out onto the crystal structure of carbonic anhydrase IX (PDB code: 3IAI), using Glide v5.0 (Schrodinger LLC). The aforesaid program was performed in order to predict the affinity and orientation of the designed compounds at the active site. The docking scores of selected best 20 compounds were comparative to that of the standard value for carbonic anhydrase IX inhibitor drug (Standard Drug: Topiramate: -3.2; Compounds: -3.6,-4.8,-4.1,-4.1,-4.0,-3.9,-3.5,-3.3,-5.3,-5.9,-6.1,-5.9,-3.9,-4.7,-4.4,-5.0,-4.1,-6.1,-3.4,-4.7). The conclusive result of docking program of the envisaged dataset gave a perspective for synthesis. Hydrogen bonding, hydrophobic/hydrophilic interactions of docked ligands with the active site of the receptor seem to reliably satisfy our need to design and forecast their carbonic anhydrase IX inhibitory ability.

Keywords: Carbonic anhydrase IX, benzthiazole, molecular modelling, carbonic anhydrase inhibition, hCA IX

DEVELOPMENT OF MULTIPLE EMULSION OF ANDROGRAPHOLIDE FOR TASTE MASKING

Verma K.[1], Shukla T.[2], Pandey S. P.[1], Chandel H. S.[1]

[1]Truba Institute of pharmacy, Bhopal, [2]School of Pharmacy, Peoples University, Bhopal

Abstract

Multiple emulsions have been proposed to have numerous uses including their use for enhancement of bioavailability. Andrographolide (diterpinoid lactone) is the major active bitter glycoside obtained from *Andrographis paniculata* and has been found to possess remarkable hepato-protective activity. We entrapped andrographolide into a multiple emulsion to mask its bitter taste and facilitate the delivery of andrographolide in liver and enhance the therapeutic efficacy during hepatic damage. Multiple emulsions were prepared with the optimal globule size and drug content was found to be upto 80%. Multiple emulsions were stabilized using a combination of hydrophilic and hydrophobic surfactants in ratio 4:1. The ratio of these surfactants is important in achieving stable multiple emulsions. The present work has resulted into taste-masked multiple emulsion with optimum stability leading to safer and more effective formulation. Optimized formulation were also studied for the hepato-protective activity and found to be more effective rather than the pure andrographolide.

Keywords: Andrographolide, Multiple emulsions, bitter glycoside

PRESENT AND THE FUTURE OF PAMAM DENDRIMERS IN NANOMEDICINE AND PHARMACEUTICAL SCIENCES

Ram Narayan Prajapati[*#†], Rishikesh Gupta[†], Sunil Kumar Prajapati[†]

[*†]Institute of Pharmacy, Bundelkhand University, Jhansi (U. P.) India, [#]Shri Venkateshwara University, Gajraula, Dist-Amroha (U. P.) India
Email: prajapatirn@gmail.com

Abstract

The application of nanotechnology in medicine and pharmaceuticals is a rapidly advancing field that is rapidly gaining recognition as an autonomous area of research called "nanomedicine." PAMAM dendritic polymers have gained noteworthy attention in the field of nanomedicine and pharmaceutical sciences due to their exclusive properties such as size, shape, and multifunctionality, well-defined, hyperbranched structures, nanoscale sizes, multiple hollow cavities and surface functionalities. Collectively, these physicochemical characteristics together with advancements in design of biodegradable backbones have conferred many applications to PAMAM dendrimers in formulation science and nanopharmaceutical developments. The dendrimeric nanostructures possess improved quality of physical, chemical, and biological properties such as solubility, stability, ability to work as delivery systems, and many others. The extreme versatility of dendritic polymers with extensive research efforts is underway, leading to the development of drug delivery systems for wide clinical use. The PAMAM dendrimer-based technologies offer exciting novel interfaces between chemistry, biology and advanced materials.

Keywords: PAMAM dendrimer, drug delivery, therapeutic application, diagnostic application, and tissue engineering

HERBAL DRUG DELIVERY SYSTEM FOR DIABATES

[1]Yoshita Varshney*, [2]Rajesh shukla, [1]Santram Lodhi, [1]Gopal Rai

[1]Guru RamdasKhalsa Institute of Science and Technology (Pharmacy), Jabalpur, M. P., [2]Dept. of Pharmaceutical Science, Suresh Gyan Vihar University, Mahal, Jagatpura, Jaipur (RJ)
Email: vyoshita@gmail.com

Abstract

Plant based medicines are used from ancient time for treatment of diseases. Many common herbs and spices are claimed to have blood sugar lowering properties that make them useful for people with or at high risk of type 2 diabetes. A number of clinical studies have been carried out in recent years that show potential links between herbal therapies and improved blood glucose control, which has led to an increase in people with diabetes using these more 'natural' ingredients to help manage their condition. Plant-based therapies that have been shown in some studies to have anti-diabetic properties include: Aloevera, Bilberry extract, Bitter melon, Cinnamon, Fenugreek, Ginger, Okra. While such therapies are commonly used in ayurvedic and oriental medicine for treating serious conditions such as diabetes, many health experts in the west remain sceptical about their reported medical benefits. In fact, because certain herbs, vitamins and supplements may interact with diabetes medications (including insulin) and increase theirhypoglycemic effects, it is often argued that use of natural therapies could reduce blood sugars to dangerously low levels and raise the risk of other diabetes complications. Whatever your intended reasons for using these specific herbs, you must always discuss your plans with your doctor and diabetes healthcare team first to ensure they are safe for your condition and determine a suitable dose. Plant based medicines are used from ancient time for treatment of diseases. In some cases desirable effect are not achieved because the biological action of herbal medicine is due to phytoconstituents which can vary batch to batch. The amount of phytoconstituent in a plant can vary according to age of plant, time of collection, environmental condition etc. To overcome this problem standardized medicinal plants, plant extracts and isolated constituents can be used. But in case of most of herbal medicine stability as well as absorption is the limiting factor. Novel drug delivery system (NDDS) play very important role to overcome above mentioned issues. Moreover the patient compliance also increases.

Keywords: Antidiabetics, hypoglycemic effect, novel drug delivery system (NDDS), phytoconstitutent

FORMULATION OF AMISULPRIDE LOADED NANOEMULSION DRUG DELIVERY SYSTEM FOR THE TREATMENT OF SCHIZOPHRENIA

***Nirvesh Chaudhri, Girish C. Soni, S. K. Prajapati**

Department of Pharmaceutics, Institute of Pharmacy, Bundelkhand University, Jhansi 284002, Uttar Pradesh, India

Abstract

The treatment of schizophrenia has advanced because the therapeutic efficacy, tolerability, and safety profiles of atypical antipsychotics. Amisulpride is an atypical antipsychotic drug with unique receptor pharmacology. Amisulpride is practically insoluble in water and suffers from irregular and low bioavailability (48%). The current study is aimed at developing and optimizing a Nanoemulsion formulation of amisulpride in order to improve oral absorption of amisulpride through GIT. Nanoemulsion formulation containing Amisulpride was developed by ultra sonication method. Formulations were prepared using oil (oleic acid and IPM), two surfactants (Labrasol, and Tween 20 "Smix") and co-surfactant (PEG 400). Optimized formulation, containing 10% oil, 2:1 as S_{mix}, co-surfactant ratio 1 and 2 as ratio of Labrasol and Tween-20 in S_{mix} was prepared. Amisulpride was successfully formulated as Nanoemulsion formulation. It exhibited faster and more complete dissolution of amisulpride than marketed tablet regardless of the type and pH of the dissolution medium. Also, it showed a significant improvement of the bioavailability of amisulpride in rats. Optimized Nanoemulsion showed significant ($p<0.01$) increase *in vivo* bioavailability. Higher drug concentration in blood indicates better systemic absorption of amisulpride from Nanoemulsion. In conclusion, the oral relative bioavailability of amisulpride from optimized Nanoemulsion exhibited a 1.38-fold increase compared with the orally administrated marketed tablet. This improved oral bioavailability of amisulpride formulation.

Keywords: Amisulpride, bioavailability, nanoemulsion formulation, schizophrenia

NANOCARRIERS AS A TOOL IN CANCER DIAGNOSIS

Rajesh Kumar Mukherjee[1], Narendra Kumar Lariya[2]

[1]V. N. S Institute of Pharmacy, Bhopal, [2]Vedica College of B. Pharmacy, Bhopal
Email: pharmarkmukherjee@gmail.com

Abstract

Nanocarriers are at the leading edge of the rapidly developing field in nanotechnology. Nano-scaled carriers allowing therapeutic agents to be selectively targeted on an organ, tissue, cell specific level and also minimizing exposure of healthy tissue to drugs. Diagnosis employing nanoparticles is more effective in terms of stability, duration and efficiency. Its improve manifold by incorporating ligands of tumor specific surface receptors and specific pathways like Apoptosis, MAP kinase signalling, Targeting RAS signalling and PI3K/Akt. Nanoparticle based "molecular" imaging displays a field in which this new technology has set the stage for an evolutionary leap in diagnosis.

Keywords: Nanocarriers, chemotherapy, PI3K/Akt, MAP kinase, targeting RAS.

A REVIEW ON GREEN CHEMISTRY

Jyoti Ahirwar*[a], A. K. Jha[b],

[a]School of Pharmacy, Chouksey Engg College, Bilaspur, (C. G), [b]Shankaracharya Institute of Pharmaceutical Sciences, Bhilai, (C. G)
Email: jyoti_ah@yahoo.com

Abstract

This new approach has received extensive attention and goes by many names including green chemistry, environmentally benign chemistry, clean chemistry, atom economy and benign by design chemistry. Majority of research in green chemistry aims to reduce the energy consumption required for the production of desired product whether it may be any drug, dyes and other chemical compounds. Simply stated, green chemistry is the use of chemistry techniques and methodologies that reduce or eliminate the use or generation of feedstock, products, by-products, solvents, reagents, etc., that are hazardous to human health or the environment. A green chemistry approach is one of "continual improvement, discovery, and innovation" that will bring us ever closer to processes and products that are safe within natural ecosystems. Ultimately a product should safely degrade as a biological nutrient or it should be safely recycled. The goal of green chemistry is to create better, safer chemicals while choosing the safest, most efficient ways to synthesize them and to reduce wastes. It also focuses on replacing traditional methods of heating with that of modern methods of heating like microwave radiations. This review emphasize on principle, methodology and recent applications of green chemistry.

Keywords: Benign, energy, feedstock

SIMULTANEOUS ESTIMATION OF PIPERINE AND ATROPINE IN AYURVEDIC FORMULATION KANKASAVA BY HPTLC METHOD

Bharti Ahirwar[a]*, Dheeraj Ahirwar[b]

[a]Institute of Pharmaceutical Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur, (CG), India 495006, [b]School of Pharmacy, Chouksey Engineering College, Bilaspur, (CG), India, 495007
Email: ah_bharti@yahoo.com

Abstract

A high-performance thin-layer chromatographic method for the simultaneous estimation of piperine and atropine in well known Ayurvedic formulation, Kankasava, was developed. Linear ascending development was carried out in twin trough glass chamber saturated with toluene: ethyl acetate: diethylamine (7:2:1) v/v as mobile phase. Calibration plots for both piperine and atropine were linear in the range of 1-10 µg. The polynomial regression data for the calibration plots were indicative of good linear relationships with r^2 = 0.99956 and 0.99954 for piperine and atropine respectively. Piperine and atropine contents were varying in different formulations and the recovery value of piperine and atropine was more than 97%, which indicated better reliability and reproducibility of the method.

Keywords: Piperine, atropine, HPTLC, simultaneous estimation, Kankasava

FLOATING MICROSPHERES OF LOSARTAN POTASSIUM AGAINST HYPERTENSION

Ajit Kumar Verma[1], Anu Hardenia[1], Piush Khare[1]

[1]Sri Aurobindo Institute of Pharmacy-Indore (M. P)

Abstract

Hypertension, also referred to as high blood pressure, is a condition in which the arteries have persistently elevated blood pressure. There is emerging need to develop formulations that would not only lead to control of hypertension but also maintain the therapeutic effect for longer period of time. Losartan potassium belongs to the class III of BCS (Biopharmaceutical classification of system), exhibiting high solubility and low permeability. Hence, enhanced gastric retention time of Losartan potassium controlled release dosage form will increase its absorption. Losartan potassium belongs to the class III of BCS (Biopharmaceutical classification of system), exhibiting high solubility and low permeability. Hence, enhanced gastric retention time of Losartan potassium controlled release dosage form will increase its absorption. In the formulation, the combination of cost-effective and biocompatible polymers Eudragit® RS100 has been successfully used to formulate floating microspheres through solvent diffusion method. The formulation was found to be efficient with good recovery yield and percent drug entrapment which sustained the drug release i.e. 75.36±0.76 drug release at the end of 12 h. The Hollow microspheres can act as potential tool in the form of novel drug delivery system (NDDS) against hypertension.

Keywords: Floating microspheres**,** losartan potassium

AN OVERVIEW ON SYNTHESIS OF SCHIFF BASES AND THEIR METAL COMPLEXES USING MICROWAVE IRRADIATION

Alka Pradhan*, Harshita Goyal, Nazish Khan

Department Of Chemistry, Sarojini Naidu Govt. Girls PG College Bhopal
Email: alkapradhan18@gmail.com

Abstract

Schiff bases are multifaceted ligands which were synthesized from primary amine reacting with different aromatic aldehydes via condensation reaction. Schiff base along with their metal complexes have received a great attention because of their biological activities, including antitumour, anti-bacterial, antiinflammatory, anti-tuberculosis, antihypertension activities. Transition metal complexes derived from the Schiff base ligands with biological activity have been widely studied. This review summarizes the synthesis and biological activities of Schiff bases and its complexes.

Keywords: Schiff bases, metal complexes, antimicrobial activity, antitumor activity, microwave irradiation

NANOTECHNOLOGY FOR HEALTHY FOOD

Alpana Tiwari

Department of Physics, Government Motilal Vigyan Mahavidyalay, Bhopal 462002, india
Email: alpanatiwari24@gmail.com

Abstract

Nanotechnology is the application of scientific knowledge to manipulate and control matter in the nanoscale to make use of size-and structure-dependent properties and phenomena distinct from those associated with individual atoms or molecules or with bulk materials. The term "nanoscale" is defined as 1 to 100 nanometers (nm). Nanotechnology and products derived from nanotechnology have a wide range of applications and the potential to impact many sectors, including the health and food sectors. In the food sector, nanomaterials could be used to preserve food, improve nutritional values and enhance flavours.

Nanotechnology use in food has real advantages: The technology gives producers the power to control how food looks, tastes, and even how long it lasts. The most commonly used nanoparticle in foods is titanium dioxide. It's used to make foods such as yogurt and coconut flakes look as white as possible, provide opacity to other food colourings, and prevent ingredients from caking up. Nanotech isn't just about aesthetics, however. The biggest potential use for this method involves improving the nutritional value of foods.

The chemical industry has already incorporated nanomaterials into foods like dietary supplements and food contact substances, including cutting boards, plastic containers and sandwich bags used to store leftovers or pack lunches. Industry claims their products will make food safer, and have pushed out a wide variety of nanoscale applications in food packaging and processing that is already on the market with many others in development. We know very little about the health effects of consuming engineered nanomaterials, but what we do know is that is presents cause for alarm. Scientific research indicates that engineered nanomaterials may pose significant health risks if inhaled, ingested or spread on the skin.

Keywords: Nanoscale, nutrition

ASSESSMENT OF TOTAL HARDNESS OF GROUNDWATER

Panasare Kiran, Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

The present work is aimed at to study the total hardness of groundwater at Shivnagar Vidya Prasarak Mandal's campus, Malegaon (BK), Tal Baramati, Dist. Pune in Maharashtra state**,** India. Hardness of groundwater in SVPM'S area has particular importance because of geological reasons. This area is located in rain shadow and therefore receives only around 400–500 mm of average rainfall in monsoon. The prosperity of Baramati is due to left bank canal constructed in British era in year 1872. This canal starts from 'Veer Dam' near Saswad and ends at Walchandnagar a length of more than 100 km. Hardness of water was determined by collecting groundwater samples and subjecting these samples to a physicochemical analysis for calculating the total hardness of water at various places such as SVPM'S boys hostel, girls hostel, boys mess, girls mess and college of pharmacy. The results of analysis have been used to suggest models for predicting water quality. According to the Water Quality Association, water is considered "hard" when the measured hardness exceeds 120 mg/l. Hard water can cause calcium carbonate scale deposits in automated watering systems, which can lead to drinking water valve leaks and other operational problems. The hardness of the water for collected samples were ranges from 3 mg/l to 84 mg/l. Hence this resulting water is suitable for drinking and other domestic purposes.

Keywords: Total hardness of water, SVPM'S college of pharmacy campus, malegaon (BK), baramati, maharashtra, india.

ESTIMATION OF VENLAFAXINE IN COMMERCIAL DOSAGE FORMS USING SIMPLE AND CONVENIENT SPECTROPHOTOMETRIC METHOD

Pathan Humera, Shinde Ajay, Thite Akshay, Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

Venlafaxine belongs to a group of Antidepressant with a novel chemical structure. In these studies describes a simple, accurate, precise and cost effective UV-visible spectrophotometric method for the estimation of Venlafaxine in bulk and pharmaceutical formulations. The method is based on the measurement of absorbance of Venlafaxine in 0.1 N NaOH at 225 nm. The method obeys Beer's Lambert's law in the selected concentration range 5-25 µg/ml in selected solvent. The slope, intercept and correlation coefficient were also calculated. Results of percentage recovery study shows that the method was not affected by the presence of common excipients in tablets. The %RSD of six replicate solutions were determined to be for intraday (0.98%) and for interday (0.39%). The parameters like linearity, precision, accuracy, ruggedness and robustness were studied according to International Conference on Harmonization (ICH) guidelines. Hence this method is suitable for routine estimation of venlafaxine in bulk and pharmaceutical formulations.

Keywords: UV-visible spectrophotometer, method development, venlafaxine hydrochloride

SPECTROPHOTOMETRIC METHOD DEVELOPMENT AND VALIDATION OF PRAZOSIN

Nikam Pooja, Kale Shekhar, Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

Prazosin is an antihypertensive agent which is one of the leading marketing drugs in the world. A rapid, specific and economic UV spectrophotometric method has been developed by using methanol as a solvent to determine the prazosin contents in bulk and pharmaceutical dosage formulations. At a pre-determined λ_{max} of 248 nm, it was proved linear in the range of 1-5 µg/ml, and exhibited good correlation coefficient (R^2=0.9998) and excellent mean recovery (99.7-100.3%). The %RSD of six replicate solutions was determined by intraday precision (1.31%) and interday precision (0.12%). This method was successfully applied for the determination of prazosin content in one of the marketed brand from India. The method was validated statistically and results were in good agreement with the label claim. According to ICH gudeline method was validated for linearity, precision, accuracy. The obtained results were proved that this method can be employed for routine qualitative and quantitative analysis of prazosin in bulks as well as in the commercial formulations.

Keywords: UV-spectrophotometer, prazosin, antihypertensive agent, validation

ULTRAVIOLET SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF GLIPIZIDE IN BULK AND TABLET DOSAGE FORMULATION

Nipanikar Madhuri, Jadhav Anil, Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

Glipizide (GZ) is chemically 1cyclohexyl3 [[p[2(5methylpyrazinecarboxamido)ethyl]phenyl] sulfonyl]urea, used in the treatment of type II diabetes mellitus. The drug is commercially available as tablets for oral administration. In this present work simple, economical, precise and accurate UV spectrophotometric methods have been developed for the estimation of glipizide in bulk and pharmaceutical formulation. The present method has been developed in 0.1 N NaOH which makes it economic and reproducible. An absorption maximum was obtained at 227 nm. The method is validated by using ICH Q2R1 guideline for various parameters like linearity, precision, accuracy, ruggedness and robustness. Drug follows linearity in concentration range of 1-10 µg/ml with correlation coefficient 0.999. The accuracy studies were performed by recovery checking at three different concentrations i.e., 80%, 100% and 120 %. The % recoveries were found well within the limit. The precision of the method was studied by intra-day (% R. S. D. = 0.44 %) and for inter-day (% R. S. D. = 0.22 %) variations. The % R. S. D. value less than 2 indicate that the method is precise. Hence, the proposed method is a cost-effective for quality-controls in routine analysis of glipizide in pharmaceutical dosage formulations.

Keywords*:* UV-spectrophotometer, glipizide, valiadation

DEVELOPMENT AND VALIDATION OF AN UV SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF GLIMEPIRIDE

Pawar Nisha, Shelake Shailesh, Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

Using 0.1 N NaOH as solvent, a less toxic and cost-effective spectrophotometric method for the determination of glimepiride in solid dosage formulation was developed and validated. This method is validated according to ICH Q2R1 guideline for various parameters like linearity, precision, accuracy, ruggedness and robustness. Glimepiride follows linearity in the concentration range of 5-25 µg/ml with correlation coefficient 0.999. The accuracy studies were carriedout by checking results at three different concentrations i.e., 80%, 100% and 120 %. The % recovery was found well within the limit. The precision of the method were studied as intra-day (% R. S. D. = 0.27 %) and for interday (% R. S. D. = 0.16 %) variations. The % RSD was less than 2, which indicating the method is precise. Hence, this proposed method is a cost-effective for routine qualitative and quantitative analysis of glimepiride in pharmaceutical dosage formulations.

Keywords: UV-spectrophotometer, glimepiride, validation

METHOD DEVELOPMENT AND VALIDATION FOR THE DETERMINATION OF CEFIXIME IN PURE AND COMMERCIAL DOSAGE FORMS BY UV SPECROPHOTOMETRY

Patil Shweta, Thakar Prashant, Jagatap Satyajit; Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

The present study was undertaken to develop and validate a simple, accurate, precise, reproducible and cost effective UV-Visible spectrophotometric method for the estimation of cefixime in bulk and pharmaceutical formulation. The solvent used throughout the experiment was the methanol. Absorption maximum (λ max) of the drug was found at 286 nm. The quantitative determination of the drug was carried out at 286 nm. Beer's Lamberts law was obeyed in the range of 5-25 µg/ml. The solution was stable for more than 12 h. The method was shown linear in the selected range of concentrations which having line equation y=0.03x-0.15 with correlation coefficient of 0.999. The recovery values for cefixime ranged from 99.57%-100.86%. The percent relative standard deviation of six replicates samples were less than 2%. The % RSD of interday precision were ranges from 0.19-0.40 % and for intraday at 0.65 %. The %RSD of robustness of the method was 0.24%. Hence, this proposed method is precise, accurate and cost effective. This method could be applicable for routine quantitative determination of cefixime in bulk and pharmaceutical formulation.

Keywords: UV-spectrophotometer, cefixime, validation

DEVELOPMENT AND VALIDATION OF UV-SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF ENALAPRIL MALEATE

Pawar Yogita, Raut Sudhir, Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

The UV spectroscopic method of analysis is widely applicable for routine analytical procedure for determination of chemical compounds. By using distilled water as a solvent for enalapril maleate, it shows maximum absorbance at a wavelenght of 217 nm. The method provides a linear response from a quantitation range of 10-50 µg/ml in distilled water with 0.999 as a correlation coefficien. The linear regression equation was obtained as y=0008x-2.23. This method is giving satisfactory results in terms of intaday and interday precision (%RSD<1.58%). The %RSD of six replicate solutions were determined for intraday precision (1.50 %) and for interday precision (0.60 %). The solution was stable for more than 12 h. The accuracy values were very good for selected parameters in methods. The method was validated and proved to be robust and rugged. Hence, the obtained results showed that this method can be usefull for rapid determination of enalapril maleate in bulk as well as formulation.

Keywords: -Enalapril, spectroscopic method, peptidyl dipeptidase, validation

SPECTROPHOTOMETRIC METHOD DEVELOPMENT AND VALIDATION OF CITICHOLIN SODIUM

Pawar Avinash, Baokar Shrikrishna, Patil R. N.

Department of Pharmaceutical Analysis, Shivnagar Vidya Prasarak Mandal's College of Pharmacy, Malegaon (Bk), Tal-Baramati, Dist-Pune, Maharashtra, India 413115

Abstract

Citicholin sodium, is Psychostimulant or Nootropic or antipsychotic agent is one of the leading marketed drug in the world. Simple, sensitive, specific spectrophotometry method has been developed for the detection of Citicholin sodium in pure form and pharmaceutical formulation. The optimum condition for the analysis of drug was established. Citicholin sodium shows maximum absorbance at 271 nm. It was proved linear in the range of 20-100 µg/ml, and exhibited good correlation coefficient (R^2=0.999) and excellent mean recovery. The %RSD of six replicate solutions was determined by intraday precision (0.49%) and interday precision (0.59%). This method was successfully applied for the determination of citicholin sodium content in one of the marketed brand from India. The method was validated statistically and results were in good agreement with the label claim. According to ICH gudeline method was validated for linearity, precision, accuracy. The obtained results were proved that this method can be employed for routine qualitative and quantitative analysis of citicholin sodium in bulks as well as in the commercial formulations

Keywords: UV-spectrophotometer, citicholin sodium, validation

PHARMACOLOGICAL STUDY OF HEDYCHIUM CORONARIUM (GULBAKAWALI): A MEDICINAL PLANT

Anjali Acharya* Sumitra Giri, Shubhjeet Aichroy**

***Prof. of Chemistry** Research Scholar Institute For Excellence In Higher Education Bhopal M. P.**
Email: anjaliacharya2007@rediffmail.com

Abstract

This study describes about endangered and threatened rare medicinal plants of Amarkantak biosphere reserve (ABR) of Amarkantak, MP, India. During the present study the exploration of the newer application of rarest medicinal plants *H. coronarium* is in progress. This suggests the need for proper documentation and phytochemical analysis of rare endemic medicinal plants *H. coronarium* of Amarkantak Biosphere reserve. During survey of Amarkantak area and study sites indicated *H. coronarium* is used in the treatment of many diseases, including eye problem, acidity, respiratory problems, gynecological problem and diarrhea etc. Hence, these studies support ethno-botanical and pharmaceutical research into new drugs and treatments. Such studies will help us towards knowledge dissemination on medicinal plant-based treatments to common people.

Keywords: Hedychium coronarium, endemic medicinal plant amarkantak, respiratory gynecological

IMPACT OF PLASTIC POLLUTION ON ENVIRONMENT

Bharti Khare, Asstt. Professor, M.L.B Govt.Girls P.G.College, Bhopal
Email:kharebt@gmail.com

Abstract

Plastic is multipurpose and therefore is seen almost everywhere. Whether we are aware of it or not, plastics play an important part in our life. Plastics' versatility allows it to be used in everything from car parts to doll parts, from soft drink bottles to the refrigerators they are stored in. Plastic bags can cause considerable harm, blocking drains and suffocating wildlife mistaking the bag for food. The effects of plastic bags on the environment are really quite devastating. Throughout the world plastic bags are responsible for suffocation deaths of animals as well as inhibiting soil nutrients. The accumulation of plastic products in the environment adversely affects wildlife, wildlife habitat, or humans. Many types and forms of plastic pollution exist. Plastic pollution can adversely affect lands, waterways and oceans. Plastic bags appear to be one of the modern day conveniences that we seem to be unable to do without, they constitute an environmental menace and are responsible for most of the litter on our streets, landfills, dumpsite, beaches and oceans. They clog our drainage systems and consequently exacerbate deadly floods, cause pollution and kill wildlife. Plastic bag usage can be environmentally very damaging because they are made out of non-biodegradable substance: polythene are durable and do not rot. Plastic production is hazardous and harmful to the environment, while incinerating or burning plastic bags releases toxic substances and pollutes the air.

Keywords: Pollution, environment, wildlife, damaging

EXPLORING INDIGENOUS INDIAN MEDICINAL PLANTS AS THERAPEUTIC AGENTS

Bharti Jain*, Suman Malik and Mamta Bhattacharya

Department of Chemistry, Sadhu Vaswani College, Bairagarh, Bhopal 462030 (India)
Email: bhartikjain@gmail.com

Abstract

India is well known for having rich vegetation with a wide range of medicinal plants and a tradition of plant-based knowledge distributed amongst a vast number of ethnic groups. India is one of the twelve mega-biodiversity countries of the world. The use of information in medicinal plant research has gained considerable attention in segments of the scientific area and it has become a topic of global importance making an impact on world health. The importance of medicinal plants in traditional healthcare practices providing clues to new areas of research. The use of traditional medicine remains widespread in developing countries while the use of complementary alternative medicine (CAM) is escalating rapidly. A common belief is that plant remedies are naturally superior to synthetic drugs and that they are not harmful to human beings. There is still much we can learn from investigating herbals available abundantly in the forests particularly those which are less well known. a multidisciplinary approach is needed for this type of research. this includes proficiency in the fields of phytochemistry, pharmacology and ethnobotany. The present article deals with the major chemical constituents,medicinal properties, and pharmacological activities of some of the common medicinal plants used in Indian traditional medicine.

Keywords: Indian traditional medicine, complementary alternative medicine, biological activity, ethnopharmacology, medicinal plants

SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL ACTIVITY OF NOVEL 1-[(2-HYDROXY NAPHTHYL) (PHENYL) METHYL] THIOUREA

Alka Pradhan, Nazish Khan*, Harshita Goyal*

Department of Chemistry, Sarojini Naidu Government Girls Post Graduation College, Bhopal
Email: alkapradhan18@gmail.com

Abstract

2-Hydroxy naphthalene and benzaldehyde has undergone condensation with compound containing active hydrogen atom like thiourea. The compound thus synthesized was characterized by elemental analysis, molecular weight determination, TLC and melting point and spectral methods such as IR, ^{1}HNMR and mass. The synthesized compound was screened for antimicrobial activity against Escherichia coli and Aspergillus flavus. The results of antimicrobial studies stripped that the compound shows potential against bacterial stain as well as fungal stain.

Keywords: 2-Naphthol, thiocarbamide, betti Base, antibacterial activity, antifungal activity

STUDY OF TERNARY COMPLEXES OF (RS)-2-[(4,(3-METHOXYPROPOXY) 3METHYPYRIDIN-2-YL]-METHYLSUFINYL)1H-BENZO(D) IMIDAZOLE

Sarita Shrivastava, Rashmi Shrivastava

Chemical Laboratory, Government Motilal Vigyan Mahavidhalaya, IEHE Bhopal, Barkatullah University, Bhopal
Email: Sarita.shrivastava07@gmail.com, rashmitanishq@gmail.com

Abstract

Rabeprazole chemically known as (RS)-2-[(4,(3-methoxypropoxy) 3methypyridin-2-yl]-Methylsufinyl)1H-Benzo(d) Imidazole which is an antiulcertive drug. Rabeprazole is a weak base and it can form several complexes with inner Transition metals ions. Present research work has been focussed on the Spectrophotometric study developed for the determination of interaction of Ce(III), Sm(III), Gd(III), Yb(III) with Pantoprazole having a structure which are able to act as a chelating agent. The reaction of this drug with selected metals chloride hydrated was investigated, structure of complexes are determined with the study of UV, IR, NMR, MASS. Magnetic Susceptibility & Antibacterial study also reveals the activity of complexes.

Keywords: Antibacterial study, rabeprazole (RABE) proton pump inhibitors (PPI)

EFFECT OF EXTRACT OF *ALANGIUM SALVIFOLIUM* ON BACTERIAL CELLS AT CELLULAR & MOLECULAR LEVEL

Savita Shrivastava[1], Nitin Shrivastava[1] and N. M shrivastava[2]

[1]Department of Chemistry, MLB Government Girls PG (Autonomous) College, Bhopal-India, [2]Gandhi Medical College, Bhopal-India

Abstract

Proteins are the main building blocks for the cell and expressed form of genes and their properties may be influenced by several factors. In case of inhibitory actions of drug against microorganisms, lot of changes takes place inside the cell affecting the biological processes in such a way the cells fails to grow, divide even die. In present study the protein banding pattern obtained from the bacterial whole cell lysates of bacterium treated with inhibitory phytochemical extracts are analyzed in comparison with untreated bacterial whole cell lysates to elucidate affect of drug on bacterial cells at cellular & molecular Level. The SDS-PAGE analysis of 3 bacterial strain used in present study i.e. *Morganella morganii*, *Comamonas testosteroni* and *Pseudomonas plecoglossicida* which were inhibited by the different plant derived extracts of *Alangium salvifolium* used in the work basically disturbs the protein machinery of bacterial cell.

Keywords: *Alangium salvifolium,* SDS-PAGE

INFORMATION TECHNOLOGY PLAYS A ROLE IN ENVIRONMENT & HUMAN HEALTH

Sadhna Goyal

Professor Dept. of Chemistry, Govt. M. V. M. Bhopal (M. P.) India
Email: shalu2505@yahoo.co.in

Abstract

Information technology has treamandous potential in the field of environment education and health as in any other field like business, economics, politics our culture. Development of internet facilities, worldwide web geographical information system and information through satellites has generated a wealth of upto date information on various aspects of environment and health. A number of software have been developed for environment and health studies which are user friendly and can help in early learner in knowing and understanding the subject. Information technology as expanding rapidly with increasing applications and new avenues are being opened with effective role in education, management and planning in the field of environment and health.

Keywords: Information technology, environment

METHANOLIC SOLUTION OF *TAGETES ERECTA* FLOWER EXTRACT AS AN INHIBITOR OF IRON, COPPER & ALUMINIUM CORROSION IN ACIDIC MEDIA

Anita Dixit, Dinesh Kumar Gupta, Manoj Acharya

Motilal Vigyan Mahavidyalaya, Bhopal
Email: anitadixit2009@gmail.com

Abstract

Methanolic solution of *Tagetes erecta* flower extract was tested as corrosion inhibitor for Iron, Copper & Aluminium in 0.5 N HCl media using different techniques: Weight Loss Method, Potentiodynamic Polarization, Cyclic Voltametry. This study reveals that the flower extract acts as good inhibitor in acidic media. Potentiodynamic polarization method indicates that the flower extract act as mixed type of inhibitor. The inhibitive effect may be attributed to the adsorption of inhibitor on the metal surface. Increase of Inhibition efficiency with the increase in the inhibitor concentration along with the surface coverage (θ) values serve as a proof for adsorption of extract on the (Fe, Cu & Al) metal surface. The HPLC, FTIR studies reveal the potential of the flower extract for combating corrosion which may be due to the adsorption of xanthophyll (Lutein).

Keywords: *Tagetes erecta*, corrosion Inhibitor, potentiodynamic polarization, weight loss method

STUDY ON SYNTHESIS OF SOME NOVEL PYRAZOLONE DERIVATIVES

Ashirwaad Dubey

MBBS, Doing PG in Anesthesia, Mangalore

Abstract

Biological activity of drugs can be predicted with the help of computer aided drug design. Efforts have been conducted to improve the predictive capabilities of computational methods. There is a need to establish new ways for preventing diseases and advance drug discovery. This exemplary approach has forced towards the design of accurate computational tools to predict the selectivity of chemical reactions. Computer-assisted structure elucidation is an area of chemo-informatics and analytical chemistry helps to both spectral and structural spectrum interpretation and structure generation. Chemistry is the branch of science concerned with the properties, structure, and composition of substances and their reactions with one another. The pyrazolone derivatives, which include aminopyrine, dipyrone, antipyrine and propyphenazone, are widely used analgesics. The general principles on which CASE methods are based were reviewed and the art in this field described in solving structures of some novel pyrazolone derivatives. Pyrazolone is a key structure in various compounds of therapeutic importance. In this work a new class of pyrazolone azo derivatives has been isolated in good yields from the condensation reaction between ethyl α (4-chloro-2-methyl phenyl azo) acetoacetate with acid hydrazides of malon anilic series. Structures of the synthesised compounds were established by their IR, NMR spectra and elemental analysis.

Keywords: Computer-aided, structure, elucidation, spectral, pyrazolone

STUDIES ON SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITIES OF SOME NOVEL DERIVATIVES OF 1, 3, 4-THIADIAZOLE MOIETY

Anita Dubey

Govt. M. L. B. Girls P. G. College, Bhopal

Abstract

The need to design new compounds to deal with the resistance towards available drugs has become one of the very important areas of research today. Thiadiazole is a 5-membered ring system containing two nitrogen and one sulphur atom. Thiadiazoles and their derivatives are well known as compounds of a wide range of pharmacological activities like anti inflammatory, antidiabetic, anticancer, anticonvulsant, anti depressant, radio protective and anti oxidant. This paper covers the synthesis of the title compound by the cyclization of thiosemicarbazone of 3-iodo-4-N,N bis-2-carboxy ethyl amino benzaldehyde. A series of N substituted derivatives of 2-amino-5-(2-ethoxy 4-N,N bis-2-carboxy ethyl amino phenyl) 1,3,4-thiadiazole were also synthesized in satisfactory yield and were elucidated by elemental analysis, infrared and ^{1}H NMR spectral measurements.

Keywords: Thiadiazole, pharmacological activities, spectral measurements

HIV/AIDS: SPATIAL PREVALENCE IN MADHYA PRADESH A STUDY IN HEALTH CARE GEOGRAPHY

Manisha Dubey

Assistant Professor of Geography, M. L. B. GOVT. P. G. (Auto) College, Bhopal

Abstract

Is it the beginning of the end? No, certainly not, the slight fall in the prevalence rate of HIV/AIDS is only in some southern states of the country, rest of the human immunodeficiency virus can take 8-10 y to develop into acquired immunodeficiency syndrome in the infected person. In HIV, the condition progressively reduces the effectiveness of the immune system and leave individual susceptible to opportunistic infection and tumours. It is transmitted through direct contact of mucous membrane or the blood stream with a body fluid containing deadly virus, such as blood semens, vaginal fluid and breast milk. The transmission can involve unsafe sex, contained hypodermic needles, exchange between mother and baby during pregnancy; child birth and breast feeding.

This infection is reported from most of the districts but its concentration is more in larger urban agglomeration. HIV/AIDS cases has shot up in last few years particularly in Indore, Ujjain and Mandasur districts. Indore remained the city with most number of AIDS cases in the state followed by Bhopal, Jabalpur, and Gwalior. Now no group is immune to HIV infection. The infected people face violent attack from all walks of life.

Keywords: HIV/AIDS: Spatial facts in madhya pradesh

GAS CHROMATOGRAPHY IN PHARMACEUTICAL INDUSTRY

Rashmi Ahuja

Professor-Department of Chemistry, S. V. G. College, Bearasia

Abstract

Gas chromatography is a very versatile technique whereby wide range of volatile organics compounds can be separated based on polarity differences and boiling point differences. During manufacturing of Active Pharmaceutical Ingredients (API's) variety of organic compounds are used and variety of volatile low molecular weight intermediates formed during the process are also checked for their quality and percentage of desired compound formed. One of the main uses of Gas chromatography in this industry is to check the presence of solvents used in the process of manufacturing of API. This kind of analysis in termed as Residual solvent analysis. Almost all solvents usually have their respective maximum limits, which are based or their toxicity data, and these limits are described as International conference of Harmonization (ICH) guidelines for solvents. Choosing right column for separation of desired compound, developing a good method for analysis based on polarity and boiling point difference and quantifying the result of compound of interest with respect to standard, validating the developed method with respect to limit of detection as quantification, linearity of the method ruggedness of the method are desired. Flame Ionization Detector (FID) Thermal conductivity Detector (TCD), Election Capture detector (ECD) and Mass Detectors are most widely used in Gas Chromatography. The detected sample then recorded as chromatogram either by pen paper recorder on by computer aided integrator.

Keywords: Gas chromatography

NEEM BARK AS A SOURCE OF A HERBAL MEDICINE EFFECTIVE IN TREATMENT OF STOMACH AND INTESTINAL ULCER

Pushpa M. Rawtani

Asst. Professor, Deptt. of chemistry, Institute for Excellence in Higher Education Bhopal

Abstract

The Neem tree (Azadirachta indica) is a tropical evergreen tree native to India and is also found in other southeast countries. In India, Neem is known as "the village pharmacy" because of its healing versatility, and it has been used in Ayurvedic medicine for more than 4,000 y due to its medicinal properties. The Neem tree is a member of the Mahogany family Meliaceae The Latin name for the Neem is Azadirachta indica, Neem tree is affectionately called Nature's Drugstore since all parts of the tree are used in various forms for herbal healing. The seeds, bark and leaves contain compounds with proven antiseptic, antiviral, antipyretic, anti-inflammatory, anti-ulcer and antifungal uses. Neem contains chemicals such as Azadirachtin, Nimbin, Nimbidin, Nimbidol, Sodium nimbinate, Gedunin, Salannin Quercetin, that might help reduce blood sugar levels, heal ulcers in the digestive tract, prevent conception, and kill bacteria. Neem seed oil contains the major concentrations of these active compounds along with many fatty acids like oleic acid, stearic acid, palmitic acid, linoleic acid, etc. Lesser amounts of these active compounds are also found in Neem leaves and bark. Neem bark has Nimbidin and Sodium nimbinate that provide antibacterial, anti-ulcer, analgesic, antifungal and anti-arthritic properties The Neem bark has cool, bitter, and astringent properties Because of its antiseptic, anti-inflammatory and astringent properties, it is especially helpful in healing wounds.

Keywords: Azadirachta indica, anti-inflammatory, anti-ulcer, antifungal, nimbidin, sodium nimbinate, neem bark

STUDY OF EXPANSION OF UNIVERSE AND ANALYSIS OF DARK ENERGY

Seema Hardikar

Department of Physics Sarojini Naidu Government Girls P. G. College, Bhopal [M. P]
Email: Dr.Seema.Hardikar@gmail.com

Abstract

Since Slipher and Hubble's work in 1920's, it has been known that Universe is increasing in size as time goes on, and so distant galaxies are seen to be moving away from us. Yet according to Einstein's theory of General relativity, gravity should lead to slowing down of the expansion of the Universe. The acceleration requires a radical modification of previous models of cosmology. One possibility is that the Universe is filled with a new substance, effectively gravitationally repulsive, called Dark Energy. How can gravity be repulsive when our everyday experience shows that it is attractive? Repulsive gravity requires new form of energy which has certain weird properties. We need Dark Energy to explain why gravity seems to be driving galaxies in our Universe apart instead of pulling them together. The nature of Dark Energy is one of the most important unsolved problems in science. Either a large portion of the Universe exists in an exotic form called Dark Energy or Einstein's theory of General relativity must be replaced by new theory of gravity on cosmic scales. Dark energy cannot be isolated or probed in the laboratory and so it is difficult to understand what exactly it is made of. The present paper aims to shed light on the presence of Dark Energy in the Universe and also understand its nature.

Keywords: Universe, galaxy, general relativity, cosmology, repulsive gravity and dark energy

ALLELOPATHIC EFFECT OF AQUEOUS EXTRACT OF PARTHENIUM HYSTEROPHOROUS (L.)ONTHE POLLEN PRODUCTIVITY OF MUSTARD

Ritu Thakur Bais

Professor, Deptt of Botany, Govt. MLB Girls PG (Autonomous) College Bhopal

Abstract

A study was conducted under field conditions to investigate the allelopathic effect of aqueous Parthenium extract on pollen productivity of mustard (campestris) variety "Varuna". The plants were treated with various concentration of PLE and PLE throughout the vegetative and reproductive phase in separate experimental plots. The PLE at different concentration showed inhibitory effect. Data suggest that higher concentration of PLE significantly showed greater inhibitory effect on pollen production.

Keywords: Allelochemicals

IMPACTS OF ENVIRONMENTAL CHANGE ON HUMAN HEALTH

Sudha Verma

***Asst. Professor,* Deptt. of Chemistry, M. V. M. Bhopal**

Abstract

The concept of Environmental change is defined as "a change or disturbance of the environment caused by human influences or natural ecological process. Human physiology is "the science of the mechanical, physical and biochemical process that support the function of our body". The Environmental consequences of climate change, such as sea-level rise, change in precipitation resulting in flooding and drought heat waves, more intense hurricane and storms and degraded air quality will effect human health directly and indirectly. Persistent organic pollutants are carbon containing and halogenated,characterised by low water solubility and high lipid solubility leading together with the persistence to bio-accumulation in fatty tissue. They are also semi-volatile a property which permits these compounds either to vaporise or to be adsorbed on atmospheric particles. Many different chemicals DDT and poly chlorinated Biphenyls, Dioxins. One of the results of the interests and the ensuring research is the banning of DDT,dioxins,PCB'S and other harmful and persistent chemicles. Many potential direct effects of Environmental change on cancer risk such as increased duration and intensity of ultraviolet (UV) radiation. Better understanding of environmental change impacts on the capacity of ocean and coastal systems to provide cancer curative agents and other health enhancing products are also needed.

Keywords: Environmental change, human health

PHYTO-REMEDIATION OF LEAD

Shail Bala Sanghi

Department of Botany, Govt. M. L. B. Girls P. G. (Auto) College, Bhopal

Abstract

Indian mustard (Brassica juncea) and sunflower (Helianthus annus) were grown in lead (Pb) contaminated soils. These plants not only have the peculiar properties of withstanding the adverse climatic conditions but also pay an important role in leaching the heavy metals. Application of ethylene diamine tetra acetic acid (EDTA) to the soil significantly increased the concentration of Pb in the shoots and roots of Brassica juncea and Helianthus annus plants. Lead concentration in Helianthus annus shoots reached 3000 and 2750 mg/kg dry matter on day 7 and 14 after EDTA application respectively. EDTA was found the best in solubilizing soil-bound Pb and enhancing Pb accumulation in the Helianthus annus shoots among other chelates i.e. diethylene tri amine penta acetic acid (DTPA), hydroxyl ethylene di amine tri acetic acid (HEDTA), nitro tri acetic acid (NTA), and citric acid. Effect of EDTA on plant growth and lead uptake were studied. The plant growth was not affected up to 3.00 m mol concentration of EDTA. The Pb uptake were increase up to 40 times using EDTA

Keywords: Phyto-remediation

EFFICACY OF REED PLANTS IN CONSTRUCTED WETLAND SYSTEM

Shalini Saxena

Govt. M. L. B. College Bhopal

Abstract

Wetlands, either constructed or natural, offer a cheaper and low-cost alternative technology for wastewater treatment. A constructed wetland system that is specifically engineered for water quality improvement as a primary purpose is termed as a 'Constructed Wetland Treatment System' (CWTS). In the past, many such systems were constructed to treat low volumes of wastewater loaded with easily degradable organic matter for isolated populations in urban areas. However, widespread demand for improved receiving water quality, and water reclamation and reuse, is currently the driving force for the implementation of CWTS all over the world. Recent concerns over wetland losses have generated a need for the creation of wetlands, which are intended to emulate the functions and values of natural wetlands that have been destroyed. Natural characteristics are applied to CWTS with emergent macrophyte stands that duplicate the physical, chemical and biological processes of natural wetland systems. The number of CWTS in use has very much increased in the past few years. The use of constructed wetlands is gaining rapid interest. Most of these systems cater for tertiary treatment from towns and cities. They are larger in size, usually using surface-flow system to remove low concentration of nutrient (N and P) and suspended solids. However, in some countries, these constructed wetland treatment systems are usually used to provide secondary treatment of domestic sewage for village populations. These constructed wetland systems have been seen as an economically attractive, energy-efficient way of providing high standards of wastewater treatment.

Typically, wetlands are constructed for one or more of four primary purposes: creation of habitat to compensate for natural wetlands converted for agriculture and urban development, water quality improvement, flood control, and production of food and fiber (constructed aquaculture wetlands).

Keywords: CWTS, macrophyte, surface flow, domestic sewage, aquaculture wetlands

PHYTOCHEMICAL ANALYSIS FOR IDENTIFICATION OF ANTI-DIABETIC PROPERTY

Anita Shinde, Aditi Kulkarni

Department of Chemistry, Institute for Excellence in Higher Education, Bhopal

Abstract

Diabetes is world's fastest growing metabolic disease. 'Diabetes mellitus' describes a metabolic disorder of multiple physiology characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. It contributes to high blood pressure and is linked with high cholesterol which significantly increases the risk of heart attacks and cardiovascular disease. The complications of diabetes occur because of the effects of chronically elevated blood sugar levels and can affect all organ systems, from the skin to the heart to the sexual organs. Although long-term complications of diabetes develop gradually, they can eventually be disabling or even life-threatening. Some of the potential complications of diabetes include Heart and blood vessel disease, nerve damage (neuropathy), kidney damage (nephropathy), eye damage, foot damage, hearing impairment and various skin conditions. Medicinal plants have played an important role in treating and preventing a variety of diseases throughout the world. The natural herbs used for diabetes treatment focus on lowering blood sugar and reducing the damaging effects of the disease. These herbs are preferred due to lesser side effects and low cost. Such herbs with ant diabetic properties include babul, garlic, bitter melon, fenugreek, aloevera, neem, cinnamon, bitter gourd, etc. In the present study, some herbs have been analysed so as to formulate them as an ant diabetic drug.

Keywords: Diabetes, insulin, photochemical analysis

ADSORPTION OF SULFADIAZINE ON TALC SURFACE

Anita Chowbey

Govt. M. L. B. Girls College Bhopal

Abstract

Interactions between sulfadiazine (SDZ), a sulfa drug antibiotic, and talc, a low charge 2:1 phyllosilicate, were investigated under batch experimental conditions. The SDZ adsorption on talc was instantaneous, with a very large rate constant and a fast rate, although with a low amount. SDZ adsorption followed a linear sorption isotherm, suggesting that the hydrophobic interact instead of cation exchange was more like responsible for the uptake of SDZ. Solution pH had a unique influence on SDZ adsorption. The solute distribution coefficient was low in pH 3–7 range and increase at even lower and higher pH conditions. Molecular simulation suggested that the interactions between the benzene ring as well as the O of SDZ and the Mg in the octahedral site oftalc was partially responsible for SDZ uptake. In addition, the hydrogen bonding between the N in the amine as well as in the hetero ring and the broken bond of O on the 010 plane of talc also contributed to SDZ uptake by talc.

Keywords: TALC surface

NOURISH YOUR METABOLISM BY FOOD HABITS

Kumud Shrivastava

Chemistry Department, Govt. M. L. B. Girls P. G. College Bhopal
Email: kumud_shrivastava@yahoo.com

Abstract

Metabolism, inclusive form for chemical reactions by which the cells of an organism transform energy, maintain their identity,reproduce,All the life form single celled algae to mammals are dependent on many hundreds of simultaneous and precisely regulated metabolic reactions to support them from conceptions through growth and maturity to the final stages of life. Each of these reaction is triggered, controlled and terminated by specific cell enzymes of catalysts and each reaction is co-ordinated with the numerous other reaction throughout the organism.

Metabolic pathways in human organism from vast network of more or less interconnected reactions that often share common intermediate products. Chemical conversions, which occur during the chemical reactions, can be divided accordingly to the general mechanism shared by all substances undergoing that particular reaction. For example decarboxylation reaction involve splitting off a Carbon di oxide molecule from the carboxylic group and its substrates include various carboxylic acids.

Alcohols, carbonyl compounds and carboxylic acids from an important group by substances involved in many chemical reactions of intermediate metabolism.

Metabolism can be an important factor in determining your body weight. So, if you have a fast metabolism, this can help in preventing weight gain. While there are a number of factors that influence the rate of metabolism, there are certain foods that are known to provide a boost to your metabolism. At the same time, there are also some well known foods that slow down the metabolism. So, when you are designing your diet, you will have to be careful to include foods that speed up the metabolism and avoid those that slow down the metabolism as much as possible.

Keywords: Metabolism, decarboxylation, cell, mechanism, pathway

STRESS RELEASING NUTRIENTS

Mukta Shrivastava

Govt. M. L. B. Girls P. G. (Auto) College
Email: mukta.shrivastava07@gmail.com

Abstract

Stress is a normal and natural element in life. People have always skilled stress, right from the most primitive time. Stress can build up to intolerable levels, causing all manner of illness. The most common diseases associated with stress are heart disease, diabetes, peptic ulcer, headache; other diseases resulting from stress are chronic dyspepsia, asthma, psoriasis and sexual disorders. We are creatures of habit and fear the unknown, so that stress occurs whenever there is a major change in our lives. Stress affects the whole person-body mind feelings and behavior and can cause a wide range of symptoms. The manifestations of stress are not limited to physical symptoms; it includes poor deliberation, vague anxiety on fear for no apparent reason and periods of irritability followed by depression. Good nutrition is a powerful collaborator when it comes to dealing with stress. Certain food associated with stress and anxiety should be strictly avoided. Many soft drinks, caffeine in coffee cause's nervousness and palpitation, alcohol depletes vitamins of B group. Prolonged period of day to day pressure can weaken the immune system. Certain nutrients are Beneficial in relieving stress. An element of Vitamin B complex pantothenic acid is especially important in preventing stress. There are many tools which help in reducing the stress; Yogurt is rich in Vitamin A, and B complex. Nuts and whole grains are good source of potassium. Seeds such as alfa alfa, sun Flower, sprouts, dairy products, egg are rich in calcium and quite effective to reduce stress Complex carbohydrates boosts energy and calm the mind and above all people should simplify their style of living to eliminate unnecessary stress.

Keywords: Stress, diseases, nutrition, effective

AB-INITIO STUDY ON STRUCTURAL, ELECTRONIC AND ELASTIC PROPERTIES OF B_2 INTERMETALLIC COMPOUND SCNI: A FIRST-PRINCIPLES STUDY

Gitanjali Pagare[1,*]

[1]Department of Physics, Sarojini Naidu Govt. Girls P. G. Auto. College, Bhopal 462016, India
Email: gita_pagare@yahoo.co.in

Abstract

A theoretical study on structural, electronic and elastic properties of Scandium Intermetallic compound ScNi is performed, using full-potential linear augmented plane wave (FP-LAPW) method. For the present calculations the generalized gradient approximation (GGA) are used for exchange-correlation (XC) potential. The Exchange Correlation is described in the three PBE-GGA, WC-GGA and PBESol-GGA approximations. The ScNi compound belongs to the cubic cesium chloride (B_2-type, Pm3m, space group, 221) structure. We have calculated the ground state properties such as lattice constant (a_0 = 3.167 Å, 3.122 Å and 3.120 Å), bulk modulus (B =105.05 GPa, 121.97 GPa and 121.41 GPa) and pressure derivative of bulk modulus (B'= 4.15, 4.92 and 4.74*)* by PBE-GGA, WC-GGA and PBEsol-GGA respectively which are in excellent agreement with experimental data and other theoretical calculations. The three independent elastic constants (C_{11} = 188.36 GPa, C_{12} = 72.40 GPa and C_{44} = 61.68 GPa) are also reported. The electronic band structure (BS) and density of states (DOS) verify the metallic nature of this compound. The calculated density of states at the Fermi level is found to be 0.04 states/eV. Ductility of the present compound is analysed by using Cauchy pressure (C_{12}–C_{44}) and Pugh's criteria.

Keywords: DFT, *Ab-initio* calculations, intermetallic compounds, equation of states, density of states, ductility

PRELIMINARY PHYTOCHEMISTRY OF CHLOROFORM AND AQUEOUS EXTRACTS OF *MORINGA OLEIFERA* LAM LEAVES

Ranjana Singh[1], Mudasser Zaffer[1], Sujata Ganguli[2]

[1]Departmnt of Botany Govt. Motilal Vigyan Mahavidyalaya, Bhopal MP, [2]Department of Botany Govt. Girl Home Science College, Hoshangabad MP

ABSTRACT

Phytochemicals may protect human from a host of diseases. Phytochemicals are non-nutritive plant chemicals that have protective or disease preventive properties. The present study has been made to investigate the phytochemical screening of the leaf extracts of *M. oleifera* was for identification of various classes of active chemical constituents. Preliminary phytochemistry of *M. oleifera* leaves revealed the presence of alkaloids,carbohydrates,glycosides,tannin,flavonied,steroids and triterpnoid, The aqueous extract of the leaves contain the chemical components like carbohydrates,glycosides,tannin,flavonied,steroids except for the absence of alkaloid and triterpnoid. But the chloroform portion of the extract contains carbohydrate, flavonoid, steroid alkaloids and triterpnoid but no glycosides, tannin and flavonoid

Keywords: Phytochemical, tritepnoid, *moringa oleifera*

ANTIMICROBIAL ACTIVITY, SYNTHESIS AND CHARACTERIZATION OF SOME IRON (II) AND IRON (III) SULPHONAMIDE COMPLEXES

Ram Krishna Shrivastava

Department of Chemistry, Institute for Excellence in Higher Education, Bhopal, M. P. 462042

Abstract

Synthesis, characterization and antimicrobial activity of Fe(II) and Fe(III) complexes of sulphonamides have been studied. Complexes were synthesized and characterized by solubility, melting point, 1H-NMR, mass and UV-Vis Spectroscopy. Job's method of continuous variation revealed 1:1 and 1:2 metals-ligand stoichiometry for the complexes. The Antimicrobial activity of the synthesized iron complexes was determined against *B. substilis, E. coli* and *S. aureus*. The activities were compared with that of individual ligands and the metal complexes. The complexes showed the significant antibacterial activity. On the basis of stability constant, analytical and spectral data, the structure of iron complexes have also been proposed.

Keywords*:* Metal complexes, antibacterial activity, stability constant

DELONIX REGIA: A HIGHLY MEDICINAL IMPORTANT PLANT

Pooja Bhorga*, Shailaza kamlke

S. N. G. P. G. College, Bhopal (M. P.)
Email: hirwa.rajeev85@gmail.com

Abstract

Delonix regia, a well known plant with high medicinal value, reported to have a number of biological activities including antioxidant, antibacterial and antifungal and presence of flavonoids in its chemical constituents. Flavonoids have been associated with various activities. The present study was done to review the activity associated with *Delonix regia* leaves and flowers. This review article shows extract of *Delonix regia* leaves and flowers having high medicinal value due to presence of phytoconstituents especially phenols and flavanods.

Keywords: *Delonix regia,* review, medicinal value

WATER: THE ELIXIR OF LIFE AND ESSENCE OF GOOD HEALTH

Ranjeeta Choudhary*

***Asstt. Prof. Chemistry, Department of Chemistry, Sant Hirdaram Girls College, Bhopal 462016 (M. P) India, Email: ranjeetachoudhary@gmail.com**

Abstract

All living being depends on water for their survival. Life is not possible without water as body of every organism is composed of about 60% to 70% of water. Quality of water plays very important role. Adequate supply of fresh and clean drinking water is necessary for good health of human beings. Water quality has remarkable effects on human health. Drinking clean water can do miracles. It can eradicate many waterborne diseases like diarrhea, dysentery, cholera, typhoid and malaria. There are many health benefits of drinking clean and healthy water. Drinking one glass of water in every 20-30 min will have revitalizing effects on body. It helps in digestion of food, absorption and transportation of nutrients, detoxification of body, maintenance of body temperature, maintaining proper body weight, decreasing inflammation of muscle and joint, increase disease resistant capacity by strengthening the immune system, improve memory and concentration. It often reduces joint pain and risk of cancer. We often hear that "Precaution is better than cure". So, by drinking more and more water we can reduce risk of serious health issues. This paper deals with the study of water related health issues. Thus, we can improve our health conditions by changing our water consumption habits.

Keywords: Detoxification, health issues, miracles, water, nutrients, immune system, diseases

NATURAL INFLUENCE OF HUMAN ACTIVITIES ON THE QUALITY OF GROUND WATER

Ratna Roy

Deptt. of Chemistry Govt. M. L. B. Girls PG Autonomous College, Bhopal, INDIA
Email: pathakratnaroy@rediffmail.com

Abstract

The quality of any body of surface or ground water is a function of either or both natural influences and human activities. Without human influences, water quality would be determined by the weathering of bedrock minerals, by the atmospheric processes of evapotranspiration and the deposition of dust and salts by wind, by the natural leaching of organic matter and nutrients from soil, by hydrological factors that lead to runoff, and by biological processes within the aquatic environment that can alter the physical and chemical composition of water. As a result water in the natural environment contains many dissolved substances and non-dissolved particulate matter. Dissolved salts and minerals are necessary components of good quality water as they help maintain the health and vitality of the organisms that rely on this ecosystem service (Stark *et al.*, 2000). The distribution of water hardness, a water quality parameter that is most influenced by the geology of the surrounding drainage basin, in lake and river monitoring stations worldwide.

Water can also contain substances that are harmful to life. These include metals such as mercury, lead and cadmium, pesticides, organic toxins and radioactive contaminants. Water from natural sources almost always contains living organisms that are integral components of the biogeochemical cycles in aquatic ecosystems. However, some of these particularly bacteria, protists, parasitic worms, fungi, and viruses, can be harmful to humans if present in water used for drinking.

Keywords: Evapotranspiration, weathering, hydrological factors, protists

ANTIBACTERIAL ACTIVITY OF EXTRACTS FROM AEGLE MARMELOS AGAINST DIFFERENT BACTERIAL STRAINS

Shobha Shrivastava

S. N. G. G. P. G. College, Bhopal
Email: dr. shobhashrivastava@rediffmail.com

Abstract

According to World Health Organization, medicinal plants are the best source to obtain a variety of newer herbal drugs. About 80% of individuals from developed countries use traditional medicine, which has compounds derived from medicinal plants. Therefore, such plants should be investigated to better understand their properties, safety and efficacy. Over the last few years, researchers have aimed at identifying and validating plant-derived substances for the treatment of various diseases. There are more than 35,000 plant species being used in various human cultures around the world for medicinal purpose. This revival of interest in plant derived drugs is mainly due to the current widespread belief that "green medicine" is safe and more dependable than the costly synthetic drugs, many of which have adverse side effects.[1] Search for newer drugs from plant has been increasing day by day due to the emergence of new diseases and alarming side-effects of synthetic drugs.[2]

Antibacterial properties of various plants parts like root stem leaves, seeds, flowers, fruits have been well documented for some of the medicinal plants for the past two decades.[3] Medicinal plants are rich source of novel drugs that forms the ingredients in traditional systems of medicine, modern medicines, nutraceuticals, food supplements, folk medicines, pharmaceutical intermediates, bioactive principles and lead compounds in synthetic drugs.[4]

Aegle marmelos is one of the medicinal plant belongs to the family Rutaceae, and is popularly known as Bael.[5] Its medicinal properties have been described in the ancient medical treatise in Sanskrit, Charaka Samhita. Bael leaves are extremely useful for treating diabetes, jaundice, cholera and asthma other parts like fruits stem and roots at all stages of maturity are used as ethno medicines against various human ailments.[6] The main aim of the present research work is to determine the antibacterial potential of *Aegle marmelos.*

In the present study ethanolic leaf extract of *Aegel marmelos*, showed more4 inhibition against Gram-positive and Gram-negative bacteria than aqueous extract. Although this study investigated the preliminary screening of antibacterial activity, the results showed that the extracts from *Aegle marmelos* possess good antibacterial activity which might be helpful in preventing the progress of various diseases and can be used in alternative system of medicine.

Keywords: *Aegle marmelos,* antibacterial activity disc

SIGNIFICANCES OF MEDICINAL PLANTS-AN INSIGHT

Suman Malik, Bharti jain*, Mamta Bhattacharya

Department of Chemistry, Sadhu Vaswani College, Bairagarh. Bhopal 462030(India)
Email: drsumanmalik@gmail.com

Abstract

Plants may be described as biosynthetic laboratories for a multitude of compounds including glycosides, alkaloids,terpinoids,flavanoids etc., which exert physiological and therapeutic effects. Among the plants that furnish products for the crude-drug trade are common weeds, popular wild flowers, and important forest trees. The world health organization (WHO) has recently recognized the importance of traditional medicinal system in different parts of globe and around 4000 plant species have been identified which are used in traditional herbal medicinal system recent years, due to growing recognition of natural products and process in sustaining human and environmental health, the economic as well as environmental importance of the medicinal plant resources have increased tremendously. Medicinal plants are used at the household level and by the practitioners of classical traditional systems of medicine such as Ayurveda, Chinese medicine and the Japanese medicine system. This communication will provide an insight on information on the phyto-onstituents, biological properties of various plant species and the possible strategies that could be adopted to extract and explore these in an effective manner.

Keywords: Biosynthetic laboratories, phytochemical screening, biologically active constituents, medicinal plants

PHYTOCHEMICALINVESTIGATIONSAND*IN VITRO* PRODUCTION OF BIOACTIVE COMPOUNDS FROM AERIAL EXPLANTS OF *ADANSONIA DIGITATA* L.: AN ENDANGERED MEDICINALLY IMPORTANT TREE SPECIES.

Sugandha Singh[a*], Rai Shashi[b], Varsha Parasharami[c]

[a]*Asstt. Prof. Biotechnology, Department of Biotechnology, Sant Hirdaram Girls College, Bhopal 462016 (M. P) India, [b]Group Director, JSS & Shaheed Hemu Kalani Educational Society, Bhopal 462013 (M. P), India, [c]Senior Scientist, Plant tissue Culture Division, National Chemical Laboratory, Pune 411108 Maharashra State, India, Email: sugandhasingh178@gmail.com

Abstract

Trees are perhaps the best creations of Mother Nature. Besides their beauty & elegance, the way trees benefit the environment and the living world existing on the planet, is an example of total selfless service. *Adansonia digitata* L. is a very important tree species which is at the verge of extinction. It is not widely distributed and is restricted to a few selected pockets of India. It is storehouse of large number of commercially important secondary metabolites. The present work aims at re-instating the tree using *in vitro* approaches to harvest its medicinal potential. Qualitative Phytochemical analysis for the production of bioactive compounds in the *in vitro* grown cultures of stem and leaf derived calli of *Adansonia digitata* was carried out. The phytochemicals produced *in vitro* were compared with that of the stem and leaf samples. The study was undertaken to observe the presence of phenolics, flavonoids, alkaloids and other phytochemicals in all the test samples. The spectrophotometric estimation for phenolics, flavonoids, Tannins, alkaloids etc. showed the presence of equal or slightly increased concentrations of all these compounds in the cultures compared to the plant samples. Phenolic content was maximum in the methanol leaf calli extracts (104.31 µg (GAE)/ml as compared to the methanol stem and leaf extract 38.69µg (GAE)/ml and 61.12µg (GAE)/ml respectively. Highest flavonoid content (54.84±0.51 µg/ml) was found to be in methanolic leaf calli extract. Aqueous, acetone and methanolic extracts of plant parts, both derived from *in vitro* and *in vivo*were used for the evaluation of anti-microbial activity against routine pathogenic microorganisms. Hence, the study forms an alternative method to harvest medicinally important bioactive compounds by using cell and suspension culture technology.

Keywords: *Adansonia digitata*, endangered, secondary metabolites, bioactive compounds, Phenolics, Flavonoids, phytochemical analysis, cell suspension cultures

ANTI MICROBIAL POTENTIAL OF ETHANOLIC EXTRACT OF EMBELIA RIBES AGAINST SOME GRAM NEGATIVE BACTERIAL STAINS

Sudha Singh* and Pragya Shrivastava

AISECT University, Bhopal (M. P)
Email: singhsudha@yahoo.in

Abstract

Embelia ribes is a medicinal plant used intraditional Indian medicine for the treatment of various ailments. This plant was selected to evaluate their potential antibacterial activity. To determine antibacterial activity and phytochemicals in the crude extracts of this medicinal plant used in traditional Indian medicine for the treatment of various ailments like rheumatism, piles fever, skin diseases and snake bite. The antibacterial activity of ethanolic extracts of this plant was determined by disc diffusion and broth dilution techniques against gram-negative bacterial strains (*Macrococcusbrunensis, Bordetellahinzii, Morganellamorganii*, *Salmonella bongori*). Results revealed that the ethanol extracts of *embelia ribes* exhibited significant antibacterial activity against many gram negative strains with minimum inhibitiory concentration (MIC) ranging from 25 to 100 mg/ml. The presence of phytochemicals such as alkaloids, tannins, triterpenoids, steroids and glycosides in the extracts of this plant supports their traditional uses as medicinal plants for the treatment of various ailments. The present study reveals potential use of these plants for developing new antibacterial compounds against pathogenic microorganisms.

Keywords: *Embelia ribes.* antibacterial activity, gram-negative bacterial strains

EFFECT OF TIME OF COLLECTION ON TOTAL PHENOLIC CONTENT AND TOTAL FLAVONOID CONTENT OF *CALOTROPIS GIGANTEA LINN* AND *CALOTROPIS PROCERA LINN*

Swati Khare[1], kirti Jain[2], Arshad Ahmad[3]

[1]Department of Botany, Govt. MLB Girls PG College, Bhopal, India, [2,3]Department of Botany Govt. Science &Commerce College Benazir, Bhopal India

ABSTRACT

Phenols and Flavonoids present in medicinal plants are considered to be among the most important bioactive components. *Calotropis procera L.* and *Calotropis gigantea L.* are much alike medicinal plants with wide range of bioactivity. Present study was designed to confirm the effect of time of collection of leaves and flowers of these plants on total phenolic content (TPC) and total flavonoid content (TFC) in Methanolic extract of these plants. In this concern TPC and TFC were quantified by spectrophotometric method using Gallic acid and Quercetin as respective standard component. Samples were collected in morning, afternoon and evening. It was observed that highest TPC was available in *Calotropis procera* leaves in the afternoon (20.10 mg/gm) and highest TFC was available in flowers in the evening (36.755 mg/gm). Significant variation in TFC and TPC level was observed in the two selected species. Thus from present investigation it can be concluded that there is a significant effect of time of collection of leaves and flowers of *C. procera* and *C. gigantea* on TPC and TFC.

Keywords: C. *gigantea*, TPC, TFC, methanolic extract and *C. procera,* quercetin

DETERMINATION OF PURITY OF CEFPODOXIME PROXETIL IN TABLET AND CAPSULAR FORMULATIONS

Shweta Hingwasiya, S. Baghel*

Asso. professor, Truba College of Science and Technology,Bhopal, *Professor, Sarojini Naidu Govt. Girls Postgraduate College, Bhopal

Abstract

A fast and eco-friendly thin layer chromatographic method for the analysis of Cefpodoxime Proxetil in tablet and capsular formulations was developed. The chromatographic plate of 20 x20 cm coated with silica gel G,mesh size 0.25 cm with concentrating zone by development in different mobile phase. For identification of spots iodine chamber and UV detector were used. This method is very quick for the analysis of purity of Cefpodoxime proxetil in areas that do not have fully equipped laboratories.

Keywords: Cefpodoxime Proxetil, Silica gel, UV detector, antibiotic, TLC

NOURISH YOUR METABOLISM BY FOOD HABITS

Kumud Shrivastava

Chemistry Department, Govt. M.L.B. Girls P.G.College Bhopal
Email: kumud_shrivastava@yahoo.com

Abstract

Metabolism, inclusive form for chemical reactions by which the cells of an organism transform energy, maintain their identity ,reproduce ,All the life form single celled algae to mammals are dependent on many hundreds of simultaneous and precisely regulated metabolic reactions to support them from conceptions through growth and maturity to the final stages of life .Each of these reaction is triggered , controlled and terminated by specific cell enzymes of catalysts and each reaction is co-ordinated with the numerous other reaction throughout the organism.

Metabolic pathways in human organism from vast network of more or less interconnected reactions that often share common intermediate products .Chemical conversions , which occur during the chemical reactions , can be divided accordingly to the general mechanism shared by all substances undergoing that particular reaction .For example decarboxylation reaction involve splitting off a Carbon di oxide molecule from the carboxylic group and its substrates include various carboxylic acids.

Alcohols , carbonyl compounds and carboxylic acids from an important group by substances involved in many chemical reactions of intermediate metabolism.

Metabolism can be an important factor in determining your body weight. So, if you have a fast metabolism, this can help in preventing weight gain. While there are a number of factors that influence the rate of metabolism, there are certain foods that are known to provide a boost to your metabolism. At the same time, there are also some well known foods that slow down the metabolism. So, when you are designing your diet, you will have to be careful to include foods that speed up the metabolism and avoid those that slow down the metabolism as much as possible.

Keywords: Metabolism, decarboxylation, cell, mechanism, pathway

FORMULATION AND EVALUATION OF STAVUDINE LOADED MATRIX TABLET USING TAMARIND SEED POLYSACCHARIDE

Sahu P[1]., Shukla T.[2], Anayatullah[1], Pandey S. P.[1], Chandel H. S[1]

[1]Truba Institute of Pharmacy, Bhopal, [2]School of Pharmacy, Peoples University, Bhopal

Abstract

Stavudine is a potent antiviral agent used in the treatment of various viral infections and the drawbacks of its conventional systems could possibly be overcome with the sustained and controlled release formulation of Stavudine. Matrix tablets of drug were prepared by non aqueous wet granulation method using tamarind seed polysaccharide as matrix forming polymer and lactose as channeling agent. Initially the concentration of tamarind seed polysaccharide was optimized to get better matrixing property and sustain release of the drug. The drug release study of the optimum formulation was found to be 96.15%. During the study it was found that if the concentration of lactose is increased more than optimum it resulted in the burst release of the formulation. When the data obtained for release of drug for final formulation were plotted according to various mathematical models it was found that the formulation is adapting to the non-fickian type of diffusion.

Keywords: Stavudin, matrix tablet, sustained release

FROMULATION AND CHARACTERIZATION OF MESALAZINE MICROBEADS FOR COLON TARGETING

Vinod Dhote[1]*, Kanika Dhote[2], Dinesh Kumar Mishra[3]

[1]Truba Institute of pharmacy, Bhopal (M.P), [2]Ravishankar College of Pharmacy, Bhopal (M.P), [3]College of Pharmacy, IPS Academy Indore 452012 (M.P)

Abstract

The rationale of present research was to formulate and characterize multiparticulate system widen specific biodegradability and pH-sensitive property of alginic acid microbead formulations, for colon-targeted delivery of Mesalazine for the treatment of Ulcerative colitis.

Sodium alginate beads containing Mesalazine were prepared by ionotropic gelation method then coated with Eudragit S100 by evaporation technique to obtain pH sensitive formulations. Formulation were optimized on various parameter includes concentration of concentration of pectin (1% w/v), sodium alginate (2% w/v), curing time (20 min) and coating solution concentration. All the formulations were evaluated for yield of product, particle size measurement, surface morphology, drug content and *in-vitro* drug release in conditions simulating colonic fluid in the presence of rat caecal content.

The average particle size of beads of optimized formulation was found to be 991.37±5.16 µm with entrapment efficiency of 92.58±1.45 %. The *in-vitro* release of microbeads coaed with Eudragit S100 was found to be 81.23%±1.91% in 24 hours. Data of *in-vitro* release was fitted into Higuchi kinetics. The optimized formulation showed zero order release. Thus, sodium alginate microbeads are the impending system to offer targeted delivery in colon of Mesalazine for the treatment of Ulcerative colitis.

Keywords: Colon targeting, microbeads, alginic acid, pectin, and ionotropic gelation

TREATMENT OF INFLAMMATORY BOWEL DISORDERS: HERBAL MEDICINES

Kanika Dhote[1]*, Vinod Dhote[2], Kapil Khatri[1]

[1]Ravishankar College of Pharmacy, Bhopal (M.P), [2]Truba Institute of pharmacy, Bhopal (M.P)

Abstract

Herbal products are prescribed from ancient time in the management for a range of gastrointestinal conditions. Scientific literature supporting the use of all herbal preparations is flawed, conversely, and existing studies are overwhelmed by methodological limitations. Herbal medicines play a key role in traditional medication system and can contribute to the target various serious disorders, when proven to be of sufficient quality, safety, and efficacy. Various herbal medicines prove to have immunomodulatory and anti-inflammatory activity. Akin to medicinal systems, herbal drugs can lead to serious adverse effects. Quality control is a solemn concern to consider when prescribing herbal medicines.

Numerous herbal preparations are marketed without complying with good manufacturing practice guidelines. Erratic environmental state may impinge on the composition and the concentration of the active ingredients of herbal origin. Additionally, marketable herbal products usually merge a capricious plethora of chemical families with probable medicinal utility. Although some of these constituent might be of advantage, but the concentration and dose of these constituents needs to be closely monitored. Prescriber necessitate remaining very vigilant about the use of herbal remedies. Appropriate scientific facts for the claimed clinical efficacy should become obligatory worldwide, and the principles for production and safety monitoring ought to obey with established standards for chemically defined products. If these principles were advocated, the herbal remedies get promising existence and benefits.

Keywords: Herbal medicine, irritable bowel syndrome, inflammatory bowel disease, herbal medicines

PULSATILE DRUG DELIVERY SYSTEM

Anamika Saxena*, Virendra Singh, Ashok Dashora

Department of Pharmaceutics, Geetanjali Institute of Pharmacy, Udaipur, Rajasthan, India 313002
Email:anamikauniqe87@gmail.com

Abstract

Pulsatile drug delivery system is the most interesting time and site specific system. This system is designed for chrono pharmacotherapy which is based on the circardian rhythm. The present study is aiming at the development of Chrono therapy is designed accordingly to thechronological behavior of body. The pulsatile drug delivery achieve desired therapeutic effect and reducing side effect, so patient compliance can be obtained along with lowering dose frequency. These systems are designed according to the circadian rhythm of the body and the drug is released as a pulse. Although oral delivery has become a widely accepted route of administration of therapeutic drugs, the gastrointestinal tract presents several formidable barriers to drug delivery. Traditionally, drugs are released in an immediate or extended fashion. However, in recent years, pulsatile drug release systems are gaining growing interest. A pulsatile drug release, where the drug is released rapidly after a well defined lag-time, could be advantageous for many drugs or therapies. Pulsatile release systems can be classified in multiple-pulse and single-pulse systems. A popular class of single-pulse systems is that of rupturable dosage forms. Other systems consist of a drug-containing core, covered by a swelling layer and an outer insoluble, but semi permeable polymer coating or membrane. Recent trends include Multiparticulate drug delivery systems that are especially suitable for achieving controlled or delayed release oral formulations with low risk of dose dumping, flexibility of blending to attain different release patterns as well as reproducible and short gastric residence time.

Keywords: Pulsatile drug delivery, thechronological, chrono therapy

EFFECTS OF ADDITIVE SUPPLEMENTS IN TISSUE CULTURE OF *GLORIOSA SUPERBA* L- A MEDICINALLY IMPORTANT PLANT

Rajashree Srinivasa*, N. Siddiqui, Renu Mishra***

***Sri Sathya Sai College for Women, Bhopal, **Govt. Gitanjali PG College, Bhopal**

Abstract

Gloriosa superba is frequently used in traditional medicine system for treatment of several diseases including infectious ones. Several active phytochemicals are present in this plant and they show remarkable effect on pathogenic bacteria. *In vitro* propogation was carried out for direct regeneration of clone plants with same genotype. Optimized hormonal combination of 5.0 mg/l BAP+1.0 mg/l NAA showed 88% bud initiation and multiplication in *Gloroisa superba* was maintained as control medium. Various supplements like coconut water, GA_3, ABA, and Biotin were added to enhance shoot multiplication in tuber sprouts of *Gloriosa superba*. With addition of 15% coconut water (cw) there was enhancement in shoot multiplication (14.6 ±1.1cm), length of shoot was 5.6 ±0.6 cm and days taken were twenty two. Coconut water improved both the quality and development of shoots in *in-vitro* cultured *Gloriosa superba.* The other additives such as GA_3, Biotin and ABA had less or no supportive effect on multiplication of shoots in *Gloriosa superba* explant.

Keywords: *Gloriosa superba, in vitro,* additive supplements, coconut water, GA_3, Biotin, ABA, explants

PHYTOCHEMICAL ANALYSIS OF *TRIGONELLA FOENUM GRAECUM* AND ITS ANTIBACTERIAL ACTIVITY AGAINST *STAPHYLOCOCCUS AUREUS*

Renu Mishra*, Shikha Mandloi, Nishi Yadav**, Jyoti Choithani*****

***HOD Botany and Microbiology Sri Sathya Sai College for Women Bhopal, **Asst. Prof. Microbiology Sri Sathya Sai College for Women Bhopal, ***Student UTD, department of Microbiology Barkatullah University Bhopal**

Abstract

Disease causing bacteria have always been considered a major cause of morbidity and mortality in humans.The appearance of multidrug resistant microorganism have paved the way to search for new antimicrobial drugs. Plants are good source of compounds which are of great significance in therapeutic treatment and help to cure the problem of multidrugs resistant organism. In the present study *Staphylococcus aureus* bacteria was isolated from the sputum of Mycobacterium negative patients. Seeds of plant *Trigonella foenum graecum* (methi) were taken for herbal drug potential studies. Phytochemical analysis of seeds was done by Soxhlet apparatus in acetone and methanol solvents. Results showed that, seeds have flavonoids, alkaloids, phenolic compound and carbohydrate present in both the extracts. The antibacterial activity of *Trigonella foecum graecum* was evaluated against human pathogenic bacteria *Staphylococcus aureus* by agar diffusion method. Methanol and acetone seed extracts of *Trigonella* were investigated for *in vitro* antibacterial activity. It has been observed that methanol and acetone extract of *Trigonella* were effective against *Staphylococcus aureus* at 100 mg/ml and 200mg/ml. From this study it is concluded that methi seeds are effective in the inhibition of *Staphylococcus aureus* growth in *in vitro* conditions.

Keywords: Bacteria, methanol, acetone, *Staphylococcus aureus, Trigonella foenum graecum,* flavonoids, alkaloids, Mycobacterium, Sputum

ACTION OF ANTINEOPLASTIC DRUGS

Basanti Jain

Professor, Deptt. of Chemistry, Govt. Girls M. L. B. (P. G.) Autonomous College, Bhopal (M. P.)
Email: jain.basanti@rediffmail.com

Abstract

The medical term for 'tumor' or 'cancer' is neoplasm, which means, a relatively autonomous growth of body tissue. Tumor is a general term for any abnormal mass or growth of tissue, which is not necessarily life-threatening. Tumor is classified into two categories. Malignant tumor which is a 'cancerous tumor' which is known as malignant neoplasm with potential danger and Non-malignant tumor or benign tumor which is a 'non-cancerous tumor' and known as non-malignant or benign tumor which does not metastasize. Metastasis is secondary growth originating from the primary tumor and may grow elsewhere in the body. Anticancer drugs act in many ways. They can react with the nuclei of cells as well as with the cell membrane and other cell organelles. Antitumor drugs can act at all phases of the cell cycle by inhibiting cellular processes; such as by inhibiting the growth of the components in a cell such as DNA, RNA and Protein. They act by disrupting DNA-dependent enzymes such as DNA or RNA polymerases, which are essential for replication and transcription of the cellular DNA. A large number of chemotherapeutic drugs play a major role through the above processes for their biological activity and as inhibitors of growth of mammalian cancers.

Keywords: Neoplasm, malignant, benign, metastatis

ANTI CANCEROUS THERAPIES

Sushama Singh Majhi

Deptt. of Chemistry, Govt. Motilal Vigyan Mahavidyalaya, Bhopal

ABSTRACT

Ayurveda the science of life which has been time tested and undispeuted deals with various health problems adopting holistic approach. the therapies based on Herbal dimension potency yet scattered. Here an offort is being made to put faith in the knowledge about anticancer herbal therapy. Under herbal cancer therapies, the therapeutic categories most often recommended in western herbal practice.

Diets: Live foods (purifying diet): Wheat grass juice, carrot juice, raw fruits, vegetables; avoid cooked foods. Macrobiotic diet: brown rice, millet, other grains, vegetables, mostly cooked; avoid raw foods, sugar. Building diet: Fish, chicken (20%), whole grains (40%), lightly cooked vegetables (30%), concentrated foods-dairy, nuts, seeds (5%), comfort foods (5%)

"Blood purifiers"-Red clover compound (Syzygium aromaticum family myrtacae Eng Clove Essiac Nicotiana tabacum Linn solanaceae, Hoxey formula

Protein-shock (mitogen) therapy-Enderlein therapy Mistletoe, poke, venoms, camivora, 1 Compound Q

Herbal chemotherapy-(herbal bone-marrow transplant)- Reishi, Shitake, Majtake, Trametes Astragalus (spleen tonic), Ligustrum

External preparations: Escarotic salves, anti-cancer herbs Sanguinaria Chaparral Euphorbia E*uphrbia nerifolia* Linn, Common Milk Hedge, Castor oil, *Ricinus cummunis* Linn (euphorbiaceae)

Biologic and gene therapy: A number of drugs are now being developed that use the patient's own immune system to prevent or fight off cancer. Monoclonal antibodies are genetically designed infection fighters that target specific antigens-foreign particles that the immune system then attacks, Trastuzumab (Herceptin), a so-called monoclonal antibody, is designed to target and block the receptor encoded by the HER-2/neu, gene, which is responsible for cancer cell growth in about 30% of breast cancer patients.

Pau D' Arco: Is derived from the inner bark of the Tabebuia tree of Brazil and Argentian, it is used in flok medicine in South America for the treatment of a wide variety of illnesses: colds, flu, malaria, gonorrhea and cancer.

Keywords: Anticancer, ayurveda, chemotherapy

QSAR MODELLING OF ADENOSINE

Abhay Raj*, Sandeep Sahu, and M. L. Kori

Vedica College of B.Pharmacy, RKDF University, Bhopal

Abstract

Computational methodologies are used to increase the efficiency of drug discovery process by rendering the design of new drug candidates more rapid and cost-efficient. QSAR model for Adenosine is herewith explored being a widespread and endogenous nucleoside that acts as a powerful neuromodulator in the nervous system. It is a promising therapeutic target in a wide range of conditions. The structural similarity between xanthine derivatives and neurotransmitter adenosine has led to the derivatives of the heterocyclic ring being among the most abundant chemical classes of ligand antagonists of adenosine receptor subtypes. Small changes in the xanthine scaffold have resulted in a wide array of adenosine receptor antagonists. QSAR model is well characterized, with two purposes in mind: to predict adenosine antagonist activity and to offer a substructural interpretation of this group of xanthenes. The QSAR model provided good classifications of both the test and external sets. In addition, most of the contributions to adenosine receptor affinity derived by subfragmentation of the molecules in the training set agree with the relationships observed in the literature. These two factors mean that this QSAR ensemble could be used as a model to predict future adenosine antagonist candidates.

Keywords: QSAR, adenosine

NANOCRYSTALS: NOVEL TOOLS IN DRUG DELIVERY

Amarnath Kumar, Anuj K. Asati, Narendra K. Lariya, M. L. Kori

Vedica College of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

Over the last ten years, the number of poorly soluble drugs has steadily increased. Estimates state that 40% of the drugs in the pipelines have solubility problems. Literature states that about 60% of all drugs coming directly from synthesis are nowadays poorly soluble. Poor solubility in water correlates with poor bioavailability. If there is no way to improve drug solubility it will not be able to be absorbed from the gastrointestinal tract into the bloodstream and reach the site of action. There are many ways to solubilize certain poorly soluble drugs. But these methods are limited to drugs with certain properties in regard to their chemistry (eg, solubility in certain organic media) or for example to their molecular size or conformation (eg, molecules to be incorporated into the cyclodextrin [CD] ring structure. Apart from that, the usage of surfactants or cosolvents is also possible, but sometimes leads to increased side effects (eg, Cremophor EL (BASF, Ludwigshafen, Germany) increases the toxicity of Taxol and HP-β-cyclodextrin is the cause of nephrotoxicity of itraconazole in Sporanox® and other disadvantages (eg, organic solvent residues). The micronization of drug powders to sizes between 1 and 10 μm in order to increase the surface area, and thus the dissolution velocity, is not sufficient to overcome bioavailability problems of many very poorly soluble drugs of the biopharmaceutical specification class II. Drug nanocrystals are crystals with a size in the nanometer range, which means they are nanoparticles with a crystalline character. A further characteristic is that drug nanocrystals are composed of 100% drug; there is no carrier material as in polymeric nanoparticles.

Keywords: Nanocrystals, drug delivery

EVALUATION OF PHARMACOGNOSTIC STUDY AND ANTIOXIDANT POTENTIAL OF QUERCUS INFECTORIA OLIVIER

Amrita Chourasia*, Sandeep Sahu, O. P. Mukatee and M. L. Kori

Vedica college of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

The present study was aimed to investigate antioxidant potential of Quercus Infectoria Olivier. The powdered plant material was extracted with methanol and water. In qualitative analysis, various chemical tests were performed for the identification of common phytoconstituents in Qurecus infectoria extracts. The tests confirmed the presence of common constituents such carbohydrate, alkaloids, flavonoids, tannins and phenolic compounds in methanolic and aqueous extract respectively. DPPH radical scavenging activity, reducing power assay, nitric oxide scavenging activity, and hydrogen peroxide scavenging activity of Qurecus infectoria was evaluated. The DPPH radical scavenging assay is a common method to evaluate the antiradical activity of numerous substances. The findings suggested that both the extracts (methanolic and aqueous) of Qurecus infectoria have significantly showed the antioxidant activity, but methanolic extract showed more potency as compared to aqueous extract. (methanolic extract > aqueous extract). Since the preliminary phytochemical analysis of the methanolic and aqueous extracts has shown the presence of flavonoids, which has been known for its antioxidant activity. Thus it can be indicated that possible mechanism of antioxidant activity of Qurecus infectoria plant may be due to the presence of flavonoids.

Keywords: Quercus infectoria Olivier, antioxidant

QUANTUM DOTS: NOVEL TOOLS IN DIAGNOSTICS AND IMAGING

Dinesh Kewat, Anuj K. Asati, Amrendra P. Yadav and M. L. Kori

Vedica College of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

Quantum dots (QD) are luminescent nanocrystals with rich surface chemistry and unique optical properties including broad range excitation, size tunable narrow emission spectra and high photostability that make them useful as probes or carriers for traceable targeted delivery and therapy applications. They are typically composed of atoms from groups II-VI (e.g., CdSe, CdS, CdTe, ZnSe), III-V (InP and InAs) and IV-VI (PbSe). The prototypical quantum dot is cadmium selenide (CdSe). QD are nanoscale semiconductor crystals ranging typically between 1-10 nanometers and have capacity to glow or fluorescence brightly when excited by a light source such as a laser. The size and composition of QD can be varied to obtain the desired emission properties and make them amenable to simultaneous detection of multiple targets.

QDs can be surface functionalized to target specific cells or tissues by conjugating them with targeting ligands and can be used to adapt to the needed application. The successful use of QDs has been reported in the areas of *in vitro* diagnostics and imaging including live cell and whole animal imaging, blood cancer assay, cancer detection and treatment. It is also used in multiplexed analysis such as DNA detection and cell sorting and tracking. Luminescent and stable QD bioconjugates enable visualization of cancer cells in living animals. QD scan be combined with fluorescence microscopy to follow cells at high resolution in living animals. QDs have been coated with a polyacrylate cap and covalently linked to antibodies for immuno-fluorescent labelling of breast cancer marker Her2 carbohydrate encapsulated. Another application of QDs is for viral diagnosis. Rapid and sensitive diagnosis of Respiratory Syncytial Virus (RSV) is important for infection control and development of antiviral drugs.

Keywords: Quantum dots, imaging

NANO TECHNOLOGY IN DIAGNOSIS OF TUBERCULOSIS

Keerti Thakur, Narendra K, Lariya, M. L. Kori

Vedica College of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

Tuberculosis (TB) remains one of the most devastating infectious diseases and its eradication is still unattainable given the limitations of current technologies for diagnosis, treatment and prevention. The World Health Organization's goal to eliminate TB globally by 2050 remains an ongoing challenge as delayed diagnosis and misdiagnosis of TB continue to fuel the worldwide epidemic. Despite considerable improvements in diagnostics for the last few decades, a simple and effective point-of-care TB diagnostic test is yet not available. The mainstay for TB diagnostics in endemic developing countries is sputum smear microscopy. However, the sensitivity of this technology is low as it can only detect roughly half of all active cases of tuberculosis when properly used in people with co-infections and in children the sensitivity is even lower. New diagnostic tools for drug resistant TB are urgently needed for reducing diagnostic time from months to days.

Nanotechnology has triggered the development of new and cheaper approaches for biomolecular recognition that may circumvent the current limitations of conventional molecular diagnostic methods used in the global fight against TB. The new era of molecular nanodiagnostics may provide a rapid and sensitive detection of the main TB etiologic agent in humans, i.e. *Mycobacterium tuberculosis.* Different nanodiagnostics systems have been developed for the molecular diagnostics of TB. Despite the wide range of nanoscale systems being used for biomolecular assays in general (e.g. electromechanical, electrochemical), nanoparticle based systems, such as gold, silver, silica and quantum dots (QDs), have been the most widely used for TB diagnostics due to their unique physicochemical properties, that offer greater sensitivity than conventional reporter molecules and can be easily tuned and functionalized by simple chemistry modulation and derivatization. Nanoparticle-based systems have significant prospective for diagnosis, treatment and prevention of TB.

Keywords: Nano technology, tuberculosis

DRY POWDER INHALERS: NOVEL APPROACH FOR DRUG DELIVERY

Priyanka Gour, Narendra K. Lariya, Anuj K. Asati, M. L. Kori

Vedica College of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

Pulmonary drug delivery serves as major route of drug administration to treat various respiratory diseases for centuries. Ancient inhalation therapies include the use of leaves from plants, vapors from aromatic plants, balsams and myrrh. Drug delivery to the respiratory tract is still a rapidly growing field of research. With the recent advances in synthesis and manipulation of micro and nanoparticles, drug delivery has shown great potential for pulmonary application, for both local and systemic activity. This is primarily because of the several advantages offered by the pulmonary route as compared to other routes of administration. The pulmonary route is an ideal route of administration, especially for drugs that undergo extensive first-pass metabolism. Several categories of drugs (such as hormones, peptides and proteins) exhibit an improved therapeutic efficacy following their pulmonary administration. Targeted drug delivery to the respiratory tract has progressed to be one of the most recently investigated approaches for both local and systemic therapy. For local therapy, pulmonary administration offers greater site-specific deposition within the lung; thus lowering the drug dose due to the reduction in first-pass effect. Dry powder inhalation is an attractive method to deliver therapeutic agents to the respiratory tract. Local delivery is highly recommended for patients with cystic fibrosis, asthma, chronic obstructive pulmonary disease and lung cancer. Local delivery to the respiratory system is highly beneficial in this case due to significant reduction of systemic side effects, in addition to the localized concentration of medication at the site of drug action. Therefore, hormones and toxic chemotherapeutic agents are ideal drug candidates for local pulmonary administration.

Keywords: Dry powder inhalers, drug delivery

MICRO AND NANO-BIOSENSORS AS MAJOR TOOLS IN DIAGNOSIS

Puja Mishra, Narendra K. Lariya, M. L. Kori

Vedica College of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

The ability to assess health status, disease onset, disease progression and monitor treatment outcome through a non-invasive method is the main aim to be achieved in health care promotion, delivery and research. The early disease diagnosis is crucial for patient survival and successful prognosis of the disease. In recent years, the demand has grown in the field of medical diagnostics for simple and disposable devices that may demonstrate fast response times, are user-friendly, cost efficient and are suitable for mass production. Biosensor technologies offer the potential to fulfill these criteria through an interdisciplinary combination of approaches from nanotechnology, chemistry and medical science. A biosensor is a device that consists of a biological recognition system and a transducer, for signal processing, to deduce and quantity a particular analyte. A biosensor consists of a *sensitive biological element*, a biologically derived material or biomimic. The sensitive elements can be created by biological engineering; and the *transducer* or the *detector element* that transforms the signal resulting from the interaction of the analyte with the biological responsible for the display of the results in a user-friendly way. Biosensors provide advanced platforms for biomarker analysis with the advantages of being easy to use, rapid and robust as well as offering multi-analyte testing capability. Biosensors for measurement of blood metabolites such as glucose, lactate, urea and creatinine, using both electrochemical and optical modes of transduction, are commercially available. The integration of nanoscale ultrasensitive biosensors with other medical instruments will open the door to emerging medical fields, including point-of-care diagnostics and ubiquitous healthcare systems. The technology will revolutionize conventional medical practices by enabling early diagnosis of chronic debilitating diseases, ultrasensitive detection of pathogens, and long-term monitoring of patients using biocompatible integrated medical instrumentation.

Keywords: Bio-sensers, micro-sensers

PHYTOCHEMICAL AND PHARMACOGNOSTICAL SCREENING OF *ACACIA ARABICA* FOR ANTI-HYPERLIPEDEMIC ACTIVITY

Sandeep Sahu*, Amrita Chourasia, Tikam Solanki and M. L. Kori

Vedica college of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

The present study was aimed to investigate phytochemical and pharmacognostical screening of *Acacia arabica* for anti-hyperlipedemic activity. The powdered gum of Acacia arabica was subjected to preliminary organoleptic evaluation, the marcroscopic studies and morphological examination . The physicochemical analysis of gum powder was carried out. The ash values (total ash, acid insoluble ash and water soluble ash), Extractive values (water soluble and alcohol soluble extractive value) were found to be 16.8 % w/v and 12.2 % w/v respectively. The aqueous solution of gum of Acacia arabica were subjected to phytochemical screening which reveal the presence of various pharmacological active components i.e. flavonoids, carbohydrates, tannins, steroids protein and amino acids. The Pharmacological study for Anti-hyperlipidemic activity is performed on Albino Wistar mice in group of six. The amount of total cholesterol (TC), triglycerides (TG) and high density lipoprotein cholesterol (HDL-C) in serum were assayed using standard diagnostic kits supplied by SPAN diagnostic, India. LDL-cholesterol and VLDL-cholesterol were calculated by Friedwald formula.

Keywords: Phytochemical screening, *Acacia arabica*

MALARIA VACCINE: STRATEGIES AND CHALLENGES

Shiv Mishra*, Narendra K. Lariya, Anuj K. Asati and M. L. Kori

Vedica College of B.Pharmacy, RKDF University, Bhopal, MP, India

Abstract

Malaria is the most devastating parasitic disease afflicting the humankind. The disease results from infection with protozoan parasites of the genus, Plasmodium and is transmitted by female anopheles mosquitoes. Out of the 3.4 billion people in 108 countries at risk of malaria, 1.2 billion are at high risk of disease. In 2012, it was estimated that this disease caused 2000 deaths per day, the majority (77%) being children. It continues to claim an estimated 2 to 3 million lives annually and to account for untold morbidity in the approximately 300 to 500 million people infected annually.

Malaria is considered a re-emerging disease, due largely to the spread of drug-resistant parasite strains, decay of health-care infrastructure and difficulties in implementing and maintaining vector control programs in many developing countries. Although, much has been achieved in controlling malaria in many endemic areas of the world and further progress is possible through universal access to and use of existing malaria preventive, diagnostic and treatment measures. Nevertheless, the current tools on their own are unlikely to provide elimination and new tools are needed. One or more effective vaccines can be added to available measures to fill the critical gap and could support malaria control. The first successful malaria vaccine trial, based on a "whole parasite" approach, was conducted in humans in the 1950s. A broadly efficacious malaria vaccine would be the most sustainable approach to control and eventually eradicate malaria. Various strategies for development based on the target lifecycle stage of the protozoa are classified into one of three different groups *viz.* pre-erythrocytic vaccine, blood stage vaccines, and transmission-blocking vaccines. Of the various vaccines under development, the vaccine RTS,S tested early this year has shown disappointing results. There's a lot that still needs to be explored.

Keywords: Malaria, vaccine

SOLID DISPERSION: A NOVEL APPROACH FOR SOLUBILITY ENHANCEMENT OF POORLY WATER SOLUBLE DRUGS

Ashutosh Dubey[a*], Ramakant Joshi[b], Manoj Kumar Goyal[a]

[a]Department of pharmaceutics, IPS College of Pharmacy, Institute of Professional Studies, P. O. IPS College, Shivpuri Link Road, Gwalior-474001, Madhya Pradesh, India. Department of pharmaceutics, [b]Shri Ram Nath Singh Institute of Pharmaceutical Science & Technology, Gwalior-474011, Madhya Pradesh, India. *Email: ashutoshdubey@hotmail.co.in

ABSTRACT

Poorly water soluble compounds have solubility and dissolution related bioavailability problems. It is estimated that up to 40 percent of new chemical entities discovered by the pharmaceutical industry today are poorly soluble or lipophilic compounds. Improving oral bioavailability of those drugs given as solid dosage forms remains a challenge for the formulation scientists due to solubility problems. The dissolution rate could be the rate-limiting process in the absorption of a drug from a solid dosage form of relatively insoluble drugs. Therefore increase in dissolution of poorly soluble drugs by solid dispersion technique presents a challenge to the formulation scientists. Solid dispersion (SDs) techniques have attracted considerable interest of improving the dissolution rate of highly lipophilic drugs thereby improving their bioavailability by reducing drug particle size, improving wettability and forming amorphous particles. The term solid dispersion refers to a group of solid products consisting of at least two different components, generally a hydrophilic matrix and a hydrophobic drug. The matrix can be either crystalline or amorphous in nature. Most commonly used carriers for the preparation of SDs are different grade of polyethylene glycols (PEGs) and polyvinylpyrrolidone (PVPs), Gelucire 44/14, sugars, and urea etc. We discussed about solid dispersion technology and its limitations, classification, various preparation techniques with its advantages and disadvantages, and recent advances in the field of solid dispersion technology.

Keywords: solubility, BCS class II, bioavailability enhancement, hydrophilic polymers, lipophilic drugs

FORMULATION AND CHARACTERIZATION OF ORODISPERSIBLE TABLETS USING SOLID DISPERSION OF TELMISARTAN

Ramakant Joshi[a,*], Ashutosh Dubey[b]

[a]Department of pharmaceutics, Shri Ram Nath Singh Institute of Pharmaceutical Science & Technology, Gwalior-474011, Madhya Pradesh, India. [b]IPS College of Pharmacy, Institute of Professional Studies, P. O. IPS College, Shivpuri Link Road, Gwalior-474001, Madhya Pradesh, India.
***Email: joshiram78@gmail.com**

ABSTRACT

The objective of present study was to develop an effective drug delivery system for the treatment of hypertension. Telmisartan is an angiotensin II receptor antagonist (ARB), used in the management of hypertension. It is 4'-[(1, 4'-dimethyl-2'-propyl[2,6'-bi-1H-benzimidazol]-1'-yl)methyl]-[1,1'-biphenyl]-2-carboxylic acid and practically insoluble in water. Telmisartan fast dissolving formulation (tablets) is prepared by using its solid dispersion with poly ethylene glycol 4000 and mannitol as hydrophilic carriers by solvent evaporation method. Sodium starch glycolate, croscarmellose sodium and kyron T-314 Were used as superdisintegrants to formulate fast dissolving tablets by direct compression method. The developed formulations were subjected to different evaluation parameters such as micromeritic study, thickness, hardness, weight variation, wetting time, disintegration time, drug content, *in vitro* drug release profile, FT-IR, DSC, and stability study etc. The evaluation data for all batches is satisfactory out of them formulation containing high percentage of kyron T-314 shows best results in terms of wetting time, disintegrating time and *in vitro* drug release.

Keywords: Bioavailability enhancement, solubility enhancement, anti-hypertensive, BCS clsss-II, kyron T-314.

Scientific Programs

CONFERENCE SCHEDULE

10th October 2015, Day 1	From	To	Duration
Registration/tea/breakfast	8:30 AM	9:30 AM	60 min
Inauguration (Room 1)	9:30 AM	10:30 AM	60 min
Key note address 1 (Room 1)	10:30 AM	11:30 AM	60 min
Tea Break	11:30 AM	11:45 AM	15 min
Key note address 2 (Room 1)	11:45 AM	12:45 PM	60 min
Lunch / Exhibition	12:45 PM	1:30 PM	45 min
Oral sessions (Room 1-3)	1:30 PM	4:15 PM	165 min
High Tea / Poster session	4:15 PM	5:30 PM	75 min
Cultural Event	5:30 PM	7:00 PM	90 min
Dinner Reception	7:00 PM	9:00 PM	120 min
11th October 2015, Day 2			
Tea/Breakfast	8:30 AM	9:30 AM	60 min
Key note address 1 (Room 1)	9:30 AM	10:15 AM	45 min
Key note address 2 (Room 1)	10:15 AM	11:00 AM	45 min
Oral sessions (Room 1-3)	11:00 AM	1:30 PM	150 min
Lunch / Exhibition	1:30 PM	2:15 PM	45 min
Panel discussion (Room 1)	2:15 PM	3:00 PM	45 min
High Tea / Poster session	3:00 PM	4:15 PM	75 min
Closing Ceremony (Room 1)	4:15 PM	5:30 PM	75 min

INOPHARM1 ORAL PRESENTATION SCHEDULE FOR DAY 1 (10TH OCTOBER 2015)

NATURAL PRODUCT RESEARCH + PHARMACOLOGY

Day 1	Date: 10-Oct-15 Time: 1:30 PM to 04:15 PM					
Room 1	Natural Product Research + Pharmacology					
S. No.	Reg. No.	Name	Section	Affiliation	Abstract Title	Duration
11001	Speaker 1	Dr. Majid Asadi Samani	Natural Product	Iran	HERBAL APPROACHES TO PREVENTION AND TREATMENT OF LIVER DISORDERS	30 min
11002	Speaker 2	Miss Polori K L	Natural Product	South Africa	THE MEDICINAL PROPERTIES OF *IPOMOEA OBLONGATA* (E.MEY. EX. CHOISY)	30 min
11101	20151072	Mr. Ahmed Mahmood	Pharmacology	Iraq	THE ANTI-CATARACT EFFECT OF COENZYME Q10 IN RABBITS	10 min
11102	20151040	Dr. Diah Djunaedi	Natural Product	Indonesia	POTENCY OF TURMERIC ROOT DECOCTION ON SPERM INFERTILITY OF MALE MICE TO SUCCEED FAMLILY PLANNING PROGRAM IN WEST JAVA SOCIETY	10 min
11103	20151070	Dr. Regi K	Pharmacology	India	BIOACTIVITY SCREENING AND GCMS ANALYSIS OF BAUHINIA PHOENICEA LEAVES.	10 min
11104	20151109	Dr. Gitanjali Tripathy	Pharmacology	India	ANTIOXIDANT AND ANTI-BREAST CANCER ACTIVE PRINCIPLES ISOLATED FROM LIMONIA ACIDISSIMA	10 min
11105	20151102	Dr. Arpita Rai	Natural Product	India	CURCUMIN IN MUCOSAL AND CUTANEOUS DISORDER: FROM KITCHEN TO CLINIC	10 min
11106	20151128	Dr. Sumathi Sundaravadivelu	Natural Product	India	APOPTOSIS INDUCTION, CELL CYCLE ARREST AND IN VITRO AND IN SILICO ANTICANCER ACTIVITY OF ANETHOLE IN BREAST CANCER CELL LINES	10 min
11107	20151258	Mr. Pallab Kalita	Natural Product	India	ALPHA-GLUCOSIDASE AND ALPHA-AMYLASE ENZYMES INHIBITORY ACTIVITY OF KOLAKHAR: A TRADITIONALLY USED LOCAL SODA OF ASSAM	10 min
11108	20151272	Miss Kalyani Kedar	Natural Product Research	India	GCMS ANALYSIS, DETERMINATION OF TOTAL PHENOLICS, FLAVONOID CONTENT AND FREE RADICAL SCAVENGING OF ETHYL ACETATE EXTRACT OF BARKS OF PUTRANJIVA ROXBURGHII WALL (EUPHORBIACEAE)	10 min
11109	20151259	Dr. Anju Dhiman	Natural Product Research	India	OPTIMIZATION AND DEVELOPMENT OF GALLIC ACID ETHOSOMES USING TWEEN 80 AS PERMEATION ENHANCER	10 min
11110	20151094	Miss Hari Archana	Pharmacology	India	COMPUTATIONAL ANALYSIS OF INTERACTIONS BETWEEN ANTI-EPILEPTIC DRUGS AND IMPORTANT PLACENTAL PROTEINS- A POSSIBLE ROUTE FOR NEURAL TUBE DEFECTS IN HUMANS	10 min

PHARMACEUTICS

Day 1	Date: 10-Oct-15 Time: 1:30 PM to 04:15 PM					
Room 2	**Pharmaceutics**					
S. No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**	**Duration**
12001	Speaker 1	Dr. Kapil Khatri	Pharmaceutics	India	DEVELOPMENTS IN LONG ACTING INJECTABLE FORMULATIONS	30 min
12002	Speaker 2	Dr. Rajendra Singh Rajpoot	Pharmaceutics	India		30 min
12003	Speaker 3	Dr. Rakesh Ranjan	Pharmaceutics	India	REGULATORY AFFAIRS:ROLE IN PRODUCT REGISTRATION AND LIFE-CYCLE MANAGEMENT	30 min
12101	20151063	Mr. Abdul Karim Zulkarnain	Pharmaceutics	Indonesia	THE PHYSICAL STABILITY OF LOTION OPTIMUM FORMULA FROM PARTITION PRODUCT OF LEAF PHALERIA MACROCARPA AND SUN PROTECTING FACTOR DETERMINATION USING SPECTROPHOTOMETRY	10 min
12102	20151154	Miss Arunima Pramanik	Pharmaceutics	India	EFFECT OF KAOLIN ON OCULAR PERMEATION OF DEXAMETHASONE FROM HPMC MATRIX FILM	10 min
12103	20151161	Mrs. Krihtika Subramanian	Pharmaceutics	India	SCREENING AND CHARECTERIZATION OF CHITINASE FOR BIOMEDICAL APPLICATIONS FROM MARINE WASTES	10 min
12104	20151254	Dr. Bharti Sapra	Pharmaceutics	India	ANTIOXIDANT POTENTIAL OF COLLOIDAL FORMULATIONS CONTAINING CATECHINS AND EPIGALLOCATECHIN GALLATE	10 min
12105	20151192	Dr. Lomas Tomar	Pharmaceutics	South Africa	DUAL STIMULI RESPONSIVE COPOLYMERIC NETWORK FOR ORAL INSULIN DELIVERY	10 min
12106	20151333	Miss Priyanka Jain	Pharmaceutics	India	EFFECT OF SURFACE MODIFICATION ON PROTEIN ADSORPTION AND BIOCOMPATIBILITY OF PLGA NANOPARTICLE	10 min
12107		Mrs. Udita Agrawal	Pharmaceutics	SIRT, Bhopal	MOLECULAR COMPLEX (ES) CONTAINING TAILORED HYBRID NANOARCHITECTURES FOR SITE SPECIFIC DRUG DELIVERY	10 min
12108		Madhu Gupta	Pharmaceutics	H S Gour, Sagar	CYCLIC NGR PEPTIDE FUNCTIONALIZED POLYMERIC NANOPARTICLES AS DUAL-TARGETING CARRIER FOR SITE SPECIFIC ANTITUMOR DRUG DELIVERY	10 min
12109	20151275	Raichur Vinay	Pharmaceutics	Al-Ameen, Bangalore	FORMULATION AND EVALUATION OF TOPICAL DOSAGE FORMS FOR DENTAL APPLICATIONS	10 min

PHARMACEUTICAL CHEMISTRY + MISCELLANEOUS

Day 1	Date: 10-Oct-15 Time: 1:30 PM to 04:15 PM					
Room 3	**Pharmaceutical Chemistry + Miscellaneous**					
S. No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**	**Duration**
13001	Speaker 1	Dr. Payam Peymani	Miscellaneous	Iran	ROLE OF PHARMACOEPIDEMIOLOGY FOR DRUG DISCOVERY AND DEVELOPMENT (PRE-CLINICAL SURVEY, CLINICAL TRIAL AND POST MARKETING SURVEILLANCE)	30 min
13002	Speaker 2	Dr. Puneet Gandhi	Miscellaneous	India		30 min
13003	Speaker 3	Dr. Azat Mukhametov	Chemistry	Russia	VIRTUAL SCREENING AND MOLECULAR DYNAMICS SIMULATION FOR ALLOSTERIC POCKET OF DENGUE VIRUS NS2B/NS3 PROTEASE	30 min
13101	20151120	Mr. B Arvind Kumar	Miscellaneous	India	SEPARATION OF BIO-WASTE SLURRY FOR DIFFERENT BY-PRODUCTS USING PHARMACEUTICAL AND AGRICULTURAL INDUSTRIES	10 min
13102	20151299	Mr. Amar Dattatraya Damle	Miscellaneous	India	STUDY OF PHARMACY RETAIL BUSINESS WITH RESPECT TO THE EMOTIONAL INTELLIGENCE OF THE RETAILER	10 min
13103	20151216	Dr. Priyadarshini	Miscellaneous	India	STUDY OF VERO CELL LINE PROTEIN UNDER STRESS CONDITION	10 min
13104	20151024	Mr. Ziyaul Haque Momin	Chemistry	India	DOCKING AND DEVELOPMENT OF HIGHLY PREDICTIVE 3D-QSAR KNN-MFA MODELS FOR NITROIMIDAZOLE DERIVATIVES AS NON NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS AS ANTI-HIV AGENTS.	10 min
13105	20151265	Mrs. Vrushali Tambe	Chemistry	India	STABILITY INDICATING HPLC-MS/UV METHOD FOR DETERMINATION OF RACECADOTRIL FROM BULK AND FORMULATION.	10 min
13106	20151325	Dr. Venkateswarlu Konuru	Miscellaneous	India	A PROSPECTIVE OBSERVATIONAL STUDY ON MEDICATION ERRORS IN A MULTI SUPERSPECIALITY HOSPITAL	10 min
13107	20151339	Dr. Anudeep Baganarapu	Miscellaneous	India	COMPARATIVE STUDY OF SAFETY, EFFICACY AND QUALITY OF LIFE AFTER GEMCITABINE AND CISPLATIN IN CONCURRENT CHEMORADIOTHERAPY IN PATIENTS WITH SQUAMOUS CELL CARCINOMA OF CERVIX	10 min
13108		Dr. R. K. Shrivastava	Chemistry	Bhopal	ANTIMICROBIAL ACTIVITY, SYNTHESIS AND CHARACTERIZATION OF SOME IRON (II) AND IRON (III) SULPHONAMIDE COMPLEXES	10 min
13109		Shivakant Shukla	Chemistry	Bhopal	EMERGING TRENDS FOR THE TREATMENT OF SULPHUR MUSTARD TOXICITY USING DRUG COMBINATIONS	10 min
131010	20151274	Pallavi M. Patil	Chemistry	India	DEVELOPMENT AND VALIDATION OF STABILITY INDICATING RP-HPLC AND HPTLC FOR DETERMINATION OF ATORVASTATIN CALCIUM &EZETIMIBEIN BULK AND PHARMACEUTICAL DOSAGE FORMS	10 min

INOPHARM1 ORAL PRESENTATION SCHEDULE FOR DAY 2 (11TH OCTOBER 2015)

NATURAL PRODUCT RESEARCH

Day 2	Date: 11-Oct-15 Time: 11:00 AM to 01:30 PM					
Room 1	**Natural Product Research**					
S. No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**	**Duration**
21001	Speaker 1	Dr. Barkat Ali Khan	Natural Product	Pakistan	UREASE INHIBITORY ACTIVITY OF *HIPPOPHAE RHAMNOIDS* AND *CASSIA FISTULA*	30 min
21002	Speaker 2	Dr. Vijay Kothari	Natural Product	India	MINING THE NATURAL PRODUCTS IN SEARCH OF EFFECTIVE QUORUM-SENSING INHIBITORS	30 min
21101	20151207	Dr. Buavaroon Srichaikul	Natural Product	Thailand	IXORA CHINENSIS LAMK. FLOWER EXTRACT ANTI AGING DRINKS USING ULTRASONICATION	10 min
21102	20151244	Dr. Ajay Namdeo	Natural Product	India	HPTLC DENSITOMETRIC EVALUATION BY SIMULTANEOUS ESTIMATION OF GALANGIN IN ALPINIA GALANGA AND ALPINIA OFFICINARUM	10 min
21103	20151330	Dr. Khangembam Victoria Chanu	Natural Product	India	ANTICANCER PROPERTY OF PHLOGACANTHUS THYRSIFLORUS AGAINST HeLa AND MCF-7 CELLS	10 min
21104	20151060	Dr. Manju Madhavan	Natural Product	India	PHARMACOGNOSTIC, PHYTOCHEMICAL AND ANTIBACTERIAL EVALUATION OF LEAVES OF SPATHOLOBUS PARVIFLORUS (ROXB. EX DC.) KUNTZE , A RARE ENDEMIC THREATENED WOODY CLIMBER OF SOUTH INDIA .	10 min
21105	20151074	Miss yamini Sharma	Natural Product	India	GERANIOL: A POTENT ANTICANDIDAL AGENT	10 min
21106	20151124	Mrs. Chandrika chandrika	Natural Product	India	EFFICACY OF ANTIOXIDANT AND ANTI-INFLAMMATORY PROPERTIES OF LEAF EXTRACTS OF BORRERIA HISPIDA	10 min
21107	20151334	Miss Nirlep Chhiber	Natural Product	India	ROTTLERIN PROTECTS AGAINST RENAL EPITHELIAL CELL INJURY BY INHIBITING PKC-DELTA TRANSLOCATION IN MALE WISTAR RATS.	10 min
21108		Mr Dilip K Tiwari	Natural Product	Faculty LNCP, Bhopal	TRANSFEROSOMES AS HERBAL DRUG DELIVERY CARRIERS FOR IMPROVED DELIVERY	10 min
21109		Mr. Shivakant Shukla	Natural Product	Faculty LNCP, Bhopal	DEVELOPMENT OF RP-HPLC METHOD FOR SIMULTANEOUS DETERMINATION OF DRUG CEFIXIME AND ORNIDAZOLE IN TABLET DOSAGE FORM	10 min

PHARMACOLOGY

Day 2	Date: 11-Oct-15 Time: 11:00 AM to 01:30 PM					
Room 2	**Pharmacology**					
S. No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**	**Duration**
22001	Speaker 1	Ahmad Nazrun Shuid	Pharmacology	Malaysia	EFFECTS OF DIRECT AND CONTROLLED DELIVERIES OF LOVASTATIN AND TOCOTRIENOL ON HEALING OF OSTEOPOROTIC FRACTURE	30 min
22002	Speaker 2	Dr. Lokesh Deb	Pharmacology	India	ETHNOPHARMACOLOGICAL SURVEY AND DOCUMENTATION OF TRADITIONAL HEALTH CARE PRACTICES OF NORTH –EAST INDIA.: A SHORTEST PATH FOR DRUG DISCOVERY	30 min
22101	20151057	Dr. Mae Wahyuningsih	Pharmacology	Indonesia	REDUCING BCL-2 PROTEIN EXPRESSION AND INCREASING BAX PROTEIN EXPRESSION ON HELA CELL AS APOPTOTIC MODE OF 5 ALPHA-OLEANDRIN ISOLATED FROM THE LEAVES OF NERIUM INDICUM MILL.	10 min
22102		Dr. Richa Jain	Pharmacology	India	STUDY OF PHARMACOLOGICAL POTENTIALS OF LENTINULA EDODES MYCELIAL EXTRACTS AND FERMENTATION BROTH.	10 min
22103	20151239	Mr. Saneesh Kumar	Pharmacology	South Africa	HPLC/LC-MS GUIDED PHYTOCHEMICAL SCREENING OF ASTRAGALUS MEMBRANACEUS, AND PREDICTION OF POSSIBLE CYTOCHROME P450 INTERACTIONS.	10 min
22104	20151082	Dr. Prasad Thakurdesai	Pharmacology	India	EFFICACY OF 4-HYDROXYISOLEUCINE FROM FENUGREEK SEEDS AGAINST CENTRAL NERVOUS SYSTEM COMPLICATIONS OF DIABETES: IN VIVO AND IN VITRO EVIDENCE	10 min
22105	20151061	Miss Swati Kundu	Pharmacology	India	THYMOL REDUCES ARSENIC-INDUCED HYPERCONTRACTION IN ISOLATED AORTA AND TRACHEA	10 min
22106	20151234	Mr. Jithin Sunny	Pharmacology	India	IN-SILICO APPROACH TO STUDY THE BINDING ENERGY OF IL-1BETA AND IL1RN WITH ITS RECEPTOR AND IDENTIFYING THE POSSIBLE INTERACTION BETWEEN SNP VARIANT OF THE CYTOKINE COMPLEX WITH ITS RECEPTOR AND NEWLY IDENTIFIED LIGAND MOLECULE	10 min
22107	20151179	Dr. Yogesh Yadav	Pharmacology	India	METHIONINE AND ANTIOXIDANT POTENTIAL OF FICUS BENGHALENSIS LATEX AGAINST CISPLATIN INDUCED LIVER INJURY IN RATS	10 min
22108		Mr. Abhishek Sharma	Pharmacology	Faculty LNCP, Bhopal	FORMULATION AND PHARMACOLOGICAL EVALUATION OF *SCOPARIA DULCIS* L. FOR ITS HEPATOPROTECTIVE ACTIVITY	10 min
22109		Mr. Kaushelendra Mishra	Pharmacology	Faculty LNCP, Bhopal	PHARMACOLOGICAL ACTIVITIES ON GLYCYRRHIZA GLABRA –A REVIEW	10 min

PHARMACEUTICAL CHEMISTRY + MISCELLANEOUS

Day 2	Date: 11-Oct-15 Time: 11:00 AM to 01:30 PM					
Room 3	Pharmaceutical Chemistry + Miscellaneous					
S. No.	Reg. No.	Name	Section	Affiliation	Abstract Title	Duration
23001	Speaker 1	Dr. Sunil Sanghi	Chemistry	India		30 min
23002	Speaker 2	Dr. Maushami S. Kumar	Miscellaneous	India	MARINE SPONGE BIOACTIVE COMPOUNDS OF MUMBAI COASTAL REGION AND THEIR PHARMACOLOGICAL PROPERTIES	30 min
23003	Speaker 3	Dr. Surendra Jain	Chemistry	India	ROLE OF BIOINFORMATICS IN IDENTIFYING NEW MOLECULAR TARGETS FOR DRUG DISCOVERY	30 min
23101	20151230	Mr. SACHIN ANBHULE	Chemistry	India	SYNTHESIS, ANTIFUNGAL ACTIVITY AND QSAR STUDY OF TERBINAFINE ANALOGUES	10 min
23102	20151261	Mr. Manjinder Singh	Chemistry	India	DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF POLYFUNCTIONAL FLAVONES: POTENTIAL ANTI-ALZHEIMERÂ€™S AGENTS	10 min
23103	20151110	Dr. Shazina Saeed	Miscellaneous	United States	PRIONS: THE GENETICS AND IMPORTANCE IN PUBLIC HEALTH PRACTICE	10 min
23104	20151126	Mrs. Krishnamoorthy Kavithaa	Miscellaneous	India	APOPTOSIS INDUCING ACTIVITY OF BAICALEIN COATED IRON OXIDE NANOPARTICLES IN TRIPLE NEGATIVE BREAST CANCER CELLS (MDA MB 231)	10 min
23105	20151069	Mr. Prabhakar Singh	Chemistry	India	ROLE OF CURCUMIN IN REGULATION OF PLASMA MEMBRANE REDOX SYSTEM (PMRS) ACTIVITY OF ERYTHROCYTES AND ANTIOXIDANT POTENTIAL OF PLASMA	10 min
23106	20151122	Mrs. Gladis Malar	Chemistry	India	STUDIES ON PHYTOCHEMICAL SCREENING, ANTIOXIDANT ACTIVITY AND ANTIBACTERIAL ACTIVITY OF SALACIA OBLONGA STEM EXTRACT	10 min
23107	20151277	Mrs. Snehlata Yadav	Chemistry	India	SYNTHESIS AND ANTICANCER EVALUATION OF 2-MERCAPTOBENZIMIDAZOLE SCHIFF BASES	10 min
23108	20151310	Mr. Purushottam Patil	Pharmaceutics	India	EVALUATION OF POWDER AND TABLETING PROPERTIES OF CROSS LINKED CHITOSAN	10 min
23109		Mr Akshat Sharma	Pharmaceutics	Faculty LNCP, Bhopal	RECENT REVIEW IN BIOAVAILABILITY METHODS ENHANCEMENT	10 min
23110		Dr. Jitender Malik	Chemistry	Faculty LNCP, Bhopal	SYNTHESIS OF NOVEL ERYTHROMYCIN DERIVATIVES AND EVALUATED FOR ANTIBACTERIAL ACTIVITY	10 min
23111		Dr. Parul Sengar	Chemistry	Faculty LNCP, Bhopal		10 min
23112		Mr. Sarvesh Sharma	Pharmaceutics	Faculty LNCP, Bhopal	LIPOSOME CO-ENCAPSULATION OF SYNERGISTIC COMBINATION OF CURCUMIN AND ARTESUNATE FOR THE TREATMENT OF SUBCUTANEOUSLY GROWN BREAST TUMOR	10 min
23113		Harshita Goyal/Nazish Khan	Chemistry		An overview on synthesis of schiff bases and their metal complexes using microwave irradiation	10 min

INOPHARM1 POSTER PRESENTATION SCHEDULE FOR DAY 1 (10TH OCTOBER 2015)

Day 1	Date: 10-Oct-15 Time: 4:15 PM to 05:30 PM				
Poster No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**
12001	20151087	Mr. Tarikul Mazumder	Miscellaneous	India	RUNX1: A TRANSCRIPTION FACTOR GENE ASSOCIATED WITH LEUKEMIA REFLECTS CODON BIAS ACROSS MAMMALS
12002		Prathiba Pandey	Pharmaceutics	Datiya	ROLE OF NANOMEDICINE IN NANOTECHNOLOGY: AN EMERGING PARADIGM
12003	20151086	Mr. Arif Uddin	Miscellaneous	India	CODON USAGE IN HUMAN MITOCHONDRIAL GENES IN THE CONTEXT OF CANCER
12004		Pragya Bhargava	Pharmaceutics	LNCP Bhopal	RECENT ADVANCEMENT IN TABLET TECHNOLOGY
12005	20151100	Mr. Himanshu Deka	Miscellaneous	India	COMPARATIVE CODON BIAS ANALYSIS OF HA GENE IN INFLUENZA A VIRUS SUBTYPES ACROSS HUMAN, SWINE AND AVIAN HOSTS
12006		Soumya Dubey	Pharmaceutics	Shriram Jbp	LIPOSOMAL TARGETING TO TUMOR CELLS
12007	20151099	Miss Binata Halder	Miscellaneous	India	PROTEIN EXPRESSION PREDICTED BY TRANSLATIONAL EFFICIENCY IN HUMAN GENES
12008	20151088	Miss Monisha Choudhury	Miscellaneous	India	WHICH EVOLUTIONARY FORCES DICTATE CODON USAGE IN HUMAN TESTIS SPECIFIC GENES?
12009	20151050	Dr. Salfarina Ramli	Natural Product Research	Malaysia	EFFICACY AND SAFETY OF HIBISCUS ROSA SINENSIS LEAVES FROM DIFFERENT SOLVENT EXTRACTS
12010		Saltanat Sultana Qureshi	Chemistry	LNCP Bhopal	DEVELOPMENT OF RP-HPLC METHOD FOR SIMULTANEOUS DETERMINATION OF DRUG CEFIXIME AND ORNIDAZOLE IN TABLET DOSAGE FORM
12011	20151241	Mr. Sushilkumar Shinde	Natural Product Research	India	FORMULATION AND PHYTOPHARMACOLOGICAL ACTIVITY STUDIES OF FRESH JUICE OF ACACIA ARABICA STEM AND LEAVES FOR THE TREATMENT OF VARIETY OF DENTAL PROBLEMS
12012		Ajay Shukla	Natural Product Research	Khalsa Jbp	HEPATOPROTECTIVE ACTIVITY OF LEAVES EXTRACTS OF CARISSA CARANDAS LINN
12013	20151258	Mr. Pallab Kalita	Natural Product Research	India	ALPHA-GLUCOSIDASE AND ALPHA-AMYLASE ENZYMES INHIBITORY ACTIVITY OF KOLAKHAR: A TRADITIONALLY USED LOCAL SODA OF ASSAM
12014		Priyanks Yadav	Pharmaceutics	Datiya	NANOPARTICLE-BASED TARGETED DRUG DELIVERY
12015		Harsha Jalori	Natural Product Research	Bhopal	USE OF NATURAL MEDICINES INSTEAD OF ARTIFICIAL DRUG
12016	20151125	Dr. Naser Altannak	Chemistry	Kuwait	COMPARATIVE LC-MS STABILITY INDICATIND ASSAYS OF ONDANSETRON HYDROCHLORIDE / NALOXONE HYDROCHLORIDE AND METOCLOPRAMIDE HYDROCHLORIDE /NALOXONE HYDROCHLORIDE USED IN PALLIATIVE CARE
12017		Krishna Pal Verma	Pharmaceutics	LNCP Bhopal	CARRIER-BASED DRUG DELIVERY SYSTEM FOR TREATMENT OF ACNE
12018	20151137	Miss shikha jain	Chemistry	India	ISOLATION AND EVALUATION OF CHEMICAL CONSTITUENTS OF CISSUS QUADRANGULARIS
12019		Rajesh Shukla	Natural Product Research	Khalsa Jbp	LC/ESI/MS FOR THE DETERMINATION AND IDENTIFICATION OF NATURAL PRODUCT: RELEVANCE TOOL
12020	20151121	Dr. Chellaram Chinnachamy	Chemistry	India	SCREENING OF ANTAGONISTIC POTENT BACTERIA, VIBRIO BRASILLIENSIS FROM SURFACE OF SEA FAN CORAL
12021		Anusha Maru	Pharmaceutics	Arbindo Indore	POROUS SILICON BASED MULTICOMPOSITE: INNOVATIONS TO APPLICATIONS

12022	20151197	Dr. Harish Rajak	Chemistry	India	SYNTHESIS AND BIOLOGICAL EVALUATION OF SOME NOVEL 1,3,4-OXADIAZOLES TO OVERCOME ANTIMICROBIAL RESISTANCE
12023	20151145	Dr. Alankar Shrivastava	Pharmaceutics	India	RECENT UPDATE ON DEVELOPMENT OF PULSATILE DOSAGE FORM
12024		Durgesh Nandan Shukla	Pharmacology	LNCP Bhopal	CANCER STEM CELLS: A NOVEL APPROACH FOR FUTURE
12025	20151098	Miss Neha Shukla	Pharmaceutics	India	LINKING DRUG DEVELOPMENT WITH TRANSLATIONAL RESEARCH.
12026		Devendra Sen	Pharmaceutics	Khalsa Jbp	INSULIN: A PATIENT'S NON COMPLIANCE DRUG NOW EVIDENTLY COMPLIABLE VIA PULMONARY ROUTE
12027	20151146	Mr. Ketan Sharma	Pharmaceutics	India	ROBOTIC PHARMACIST-A NEW ERA IN PHARMACY
12028	20151201	Miss Sainiara Begum	Pharmacology	India	GC-MS BASED INVESTIGATION OF METABOLITES OF MITRAGYNA PARVIFOLIA (ROXB.) KORTH LEAF AND ITS NEUROPROTECTIVE AND ANTIDIABETIC POTENTIAL
12029		Ajay Lowanshi	Pharmaceutics	LNCP Bhopal	NANOTECHNOLOGY-BASED APPROACHES IN ANTICANCER RESEARCH
12030	20151116	Dr. Masoud Khosravi	Miscellanoeus	Iran	PHARMACY CARE AND OBESITY MANAGEMENT IN MIDDLE EAST EXPERIENCE: PHARMACIST POSITION
12031	20151131	Dr. Janarthanam Balasu	Natural Product	India	STUDIES ON PHYTOCHEMICAL SCREENING, TOTAL PHENOL, TOTAL FLAVONOID AND ANTIOXIDANT ACTIVITY OF HYBANTHUS ENNEASPERMUS
12032	20151328	Mrs. Monallisha Mallick	Natural Product Research	India	COMPARATIVE ANTIOXIDANT ACTIVITY STUDY OF SOME SPICES
12033	20151218	Miss Rajkumari Thagele	Pharmaceutics	India	ASSESSMENT OF VARIOUS PHARMACEUTICAL EXCIPIENT PROPERTIES OF NATURAL MORINGA OLEIFERA GUM
12034	20151153	Dr. D. Chetty	Chemistry	India	ANTIOXIDANT ACTIVITY OF A NEW SERIES OF BIS(BENZOTHIAZOLYL) PYRAZOLE HYDRAZONE DERIVATIVES D. MUNIRAJASEKHAR
12035	20151152	Mr. Ashirbad Nanda	Chemistry	India	EFFECT OF DIFFERENT VISCOSITY GRADES OF HPMC MATRIX SYSTEM ON OCULAR PERMEATION OF DEXAMETHASONE FILM FORMULATION
12036	20151251	Dr. Ujwala Bapat	Natural Product	India	COMPARATIVE STUDY OF ANTIOXIDANT ACTIVITY OF RESINS OF BOSWELLIA SERRATA ROXB. EX COLEBR., COMMIPHORA MUKUL (HOOKS EX STOCKS) ENGL., GARDENIA GUMMIFERA L.F. AND SHOREA ROBUSTA GAERTN.
12037	20151134	Miss kaminee sahu	Natural Product	India	A RESEARCH : VARIOUS MEDICINAL USES OF IPOMOEA CARNEA PLANT
12038	20151136	Mr. Abhijit Mitra	Natural Product	India	PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITIES OF THE FROND EXTRACTS OF PTERIS SEMIPINNATA LINN. (PTERIDACEAE): A TRADITIONALLY USED MEDICINAL PTERIDOPHYTE OF SOUTHERN ASSAM, INDIA
12039	20151329	Miss Sangeeta Mukhi	Natural Product	India	PHARMACOGNOSTIC, PHYTOCHEMICAL AND PHYSICOCHEMICAL STANDARDIZATION OF AMRTADI CHURNA
12040	20151103	Dr. Shamimul Hasan	Pharmacology	India	THALIDOMIDE-THE WONDER DRUG: IMPLICATIONS IN ORAL MUCOSAL LESIONS
12041	20151345	Dr. Hitendrakumar Patel	Chemistry	India	AN EFFICIENT ONE-POT SYNTHESIS, STRUCTURE, ANTIMICROBIAL, ANTIFUNGAL, AND ANTITUBERCULOSIS INVESTIGATIONS OF SOME NOVEL MANNICH PRODUCTS
12042		Soumya Mishra	Pharmacology	India	NUTRITIONAL CONNECTION OF ALZHEIMER'S DISEASE

INOPHARM1 POSTER PRESENTATION SCHEDULE FOR DAY 2 (11TH OCTOBER 2015)

Day 2	Date: 11-Oct-15 Time: 03:00 PM to 04:15 PM				
Poster No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**
22001	20151087	Mr. Tarikul Mazumder	Miscellaneous	India	RUNX1: A TRANSCRIPTION FACTOR GENE ASSOCIATED WITH LEUKEMIA REFLECTS CODON BIAS ACROSS MAMMALS
22002		Vivek Shukla	Natural Product Research	LNCP Bhopal	ANTICANCER HERBAL DRUGS AND THEIR IMPROVEMENT THROUGH NOVEL DRUG DELIVERY APPROACHES
22003	20151140	Dr. Masrina Mohd Nadzir	Miscellaneous	Malaysia	EFFECT OF COMBINATIONS OF TWEEN-80 AND SPAN-80 ON THE SIZE AND STABILITY OF CURCUMIN NIOSOMES
22004		Mayur Hariyani	Pharmaceutics	Khalsa Jbp	LIPOSOMES AS CARRIERS OF CANCER CHEMOTHERAPY
22005	20151311	Mr. Jaidev Kumar	Miscellaneous	India	ANTIRETROVIRAL DRUGS INDUCED RASH Â€“ A REVIEW
22006		Kritika Chauhan	Pharmaceutics	Indore	SILK FIBROIN-BASED NANOPARTICLES: A BOON FOR DRUG DELIVERY SYSTEM
22007	20151347	Dr. Sulekha Joshi	Natural Product Research	Kota	ETHNO-MEDICINAL PLANTS USED IN BIRTH CONTROL BY TRIBALS OF KOTA REGION OF RAJASTHAN
22008		Sugam Singhai	Pharmaceutics	Adina	Gold Nanoparticles: New approach of Targeting
22009	20151322	Miss rashmi dehariya	Natural Product Research	India	PHYTOCHEMICAL ANALYSIS OF SEED EXTRACT OF CARTHAMUS TINCTORIUS L.
22010		Sudheer Vishwakarma	Pharmaceutics	LNCP Bhopal	ADVANCES IN NUTRACEUTICAL PREPARATION AND THEIR APPLICATIONS
22011	20151323	Miss Pooja Pachurekar	Natural Product Research	India	PHAMACOGONOSTICAL AND PHYTOCHEMICAL VALUES OF HEDYCHIUM CORONARIUM J. KOENIG AN ENDANGERED MEDICINE OF MADHYA PRADESH
22012		Abhijeet Tiwari	Pharmaceutics	Datiya	MULTIFUNCTIONAL NANOMEDICINES: AN INSIGHT VIEW
22013	20151306	Mrs. Sapna Saini	Natural Product Research	India	PHARMACOGNOSTICAL AND PHYTOCHEMICAL STUDIES OF PIPER BETLE LINN. LEAF
22014	20151260	Miss Maninder Kaur	Chemistry	India	LIGAND AND STRUCTURE BASED INTEGERATED IDEAL PHARCOPHORE BASED DESIGNING OF NEW DUAL INHIBITORS OF SPLEEN TYROSINE KINASE (SYK) AND PHOSPHOIONOSITIDE-3-KINASE Î´ (PI3KÎ´) AS POTENTIAL THERAPEUTICS FOR AUTOIMMUNE DISORDERS
22015		Nitesh Kumar	Chemistry	Khalsa Jbp	CARBON NANO TUBES –AN EMERGING APPROACH
22016	20151283	Miss Navriti Chadha	Chemistry	India	INTEGRATED PHARMACOPHORE AND DOCKING BASED DESIGNING OF DUAL INHIBITORS PHOSPHOINOSITIDE-3-KINASE ALPHA (PI3KÎ±) AND MITOGEN ACTIVATED PROTEIN TYROSINE KINASE KINASE (MEK) INHIBITORS AS NOVEL THERAPEUTICS FOR CANCER
22017		Sonam Rai	Pharmaceutics	LNCP Bhopal	TRANSFEROSOMES: AS TRANSDERMAL DRUG DELIVERY SYSTEM
22018	20151289	Mr. Vaibhav Rajoriya	Chemistry	India	DESIGN, SYNTHESIS AND CHARACTERIZATION OF SOME NEW SUBSTITUTED 1,2,4-TRIAZOLES DERIVED FROM ISONICOTINIC ACID HYDRAZIDES
22019		Rishabh Patel	Pharmaceutics	Datiya	NANOCARRIER-BASED TOPICAL DRUG DELIVERY: OPTIONS AND OPPORTUNITIES FOR THE TREATMENT OF SKIN DISEASE
22020	20151332	Miss Suchita Bhoyar	Chemistry	India	INVESTIGATION OF BIOLOGICAL ACTIVITY OF TAMRA BHASMA & ITS STANDARDIZATION
22021		Vivek Singh Chouhan	Natural Product Research	LNCP Bhopal	HERBOSOMES: A CURRENT CONCEPT OF HERBAL DRUG TECHNOLOGY
22022	20151353	Mr. Soumendra Banerjee	Chemistry	India	CANCER THERAPY THROUGH HCA IX INHIBITORS : A PROSPECTIVE

22023		Chirag shrivastav		Adina	WILL BE UPDATED
22024		Soumya Mishra		Sagar	WILL BE UPDATED
22025		Kausalya Verma	Pharmaceutics	Truba	DEVELOPMENT OF MULTIPLE EMULSION OF ANDROGRAPHOLIDE FOR TASTE MASKING
22026	20151210	Mr. Ram Prajapati	Pharmaceutics	India	PRESENT AND THE FUTURE OF PAMAM DENDRIMERS IN NANOMEDICINE AND PHARMACEUTICAL SCIENCES
22027		Yoshita		Khalsa Jbp	HERBAL DRUG DELIVERY SYSTEM FOR DIABATES
22028	20151300	Miss Nirvesh Chaudhri	Pharmaceutics	India	FORMULATION OF AMISULPRIDE LOADED NANOEMULSION DRUG DELIVERY SYSTEM FOR THE TREATMENT OF SCHIZOPHRENIA
22029		Shiv K Prajapati		Adina	WILL BE UPDATED
22030		Anima Tiwari		LNCP Bhopal	WILL BE UPDATED
22031	20151240	Mr. Rajesh Mukherjee	Pharmacology	India	NANOCARRIERS AS A TOOL IN CANCER DIAGNOSIS
22032		Rahul Godhre		Adina	WILL BE UPDATED
22033		Jyoti Ahirwar	Chemistry	Bilaspur	A REVIEW ON GREEN CHEMISTRY
22034		Bharti Ahorwar	Chemistry	Ghasidas	SIMULTANEOUS ESTIMATION OF PIPERINE AND ATROPINE IN AYURVEDIC FORMULATION KANKASAVA BY HPTLC METHOD
22035		Anamika Saxena	Pharmaceutics	India	Pulsatile drug delivery system
22036		Kiran Panasare	Chemistry	Bhopal	ASSESSMENT OF TOTAL HARDNESS OF GROUND WATER
22037		Ajay Shinde	Chemistry	India	ESTIMATION OF VENLAFAXINE IN COMMERCIAL DOSAGE FORMS USING SIMPLE AND CONVENIENT SPECTROPHOTOMETRIC METHOD
22038		Sekhar Kale	Chemistry	India	SPECTROPHOTOMETRIC METHOD DEVELOPMENT AND VALIDATION OF PRAZOSIN
22039		Anil Jadhav	Chemistry	India	ULTRAVIOLET SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF GLIPIZIDE IN BULK AND TABLET DOSAGE FORMULATION
22040		Shailesh Shelake	Chemistry	India	DEVELOPMENT AND VALIDATION OF AN UV SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF GLIMEPIRIDE
22041		Prasant Tahkar	Chemistry	India	METHOD DEVELOPMENT AND VALIDATION FOR THE DETERMINATION OF CEFIXIME IN PURE AND COMMERCIAL DOSAGE FORMS BY UV SPECROPHOTOMETRY
22042		Sudheer Raut	Chemistry	India	DEVELOPMENT AND VALIDATION OF UV-SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF ENALAPRIL MALEATE
22043		Avinash Pawar	Chemistry	India	SPECTROPHOTOMETRIC METHOD DEVELOPMENT AND VALIDATION OF CITICHOLIN SODIUM
22044		Pooja Sahoo	Chemistry	Bhopal	FORMULATION AND EVALUATION OF STAVUDINE LOADED MATRIX TABLET USING TAMARIND SEED POLYSACCHARIDE
22045		Vinod Dhote	Chemistry	Bhopal	FORMULATION AND CHARACTERIZATION OF MESALAZINE MICROBEADS FOR COLON TARGETING
22046		Kanika Dhote	Chemistry	Bhopal	TREATMENT OF INFLAMMATORY BOWEL DISORDERS: HERBAL MEDICINES
22047	20151342	Mrs. Rajashree Srinivasa	Natural Product Research	India	EFFECTS OF ADDITIVE SUPPLEMENTS IN TISSUE CULTURE OF *GLORIOSA SUPERBA* L- A MEDICINALLY IMPORTANT PLANT
22048	20151341	Dr. Renu Mishra	Natural Product Research	India	PHYTOCHEMICAL ANALYSIS OF *TRIGONELLA FOENUM GRAECUM* AND ITS ANTIBACTERIAL ACTIVITY AGAINST *STAPHYLOCOCCUS AUREUS*
22049		Abhay Raj	Chemistry	Vedika	QSAR MODELLING OF ADENOSINE
22050		Amarnath Kumar	Pharmaceutics	Vedika	NANOCRYSTALS: NOVEL TOOLS IN DRUG DELIVERY

22051		Amrita Chourasia	Natural Product Research	Vedika	EVALUATION OF PHARMACOGNOSTIC STUDY AND ANTIOXIDANT POTENTIAL OF QUERCUS INFECTORIA OLIVIER
22052		Dinesh Kewat	Chemistry	Vedika	QUANTUM DOTS: NOVEL TOOLS IN DIAGNOSTICS AND IMAGING
22053		Keerti Thakur	Pharmaceutics	Vedika	NANO TECHNOLOGY IN DIAGNOSIS OF TUBERCULOSIS
22054		Priyanka Gour	Pharmaceutics	Vedika	DRY POWDER INHALERS: NOVEL APPROACH FOR DRUG DELIVERY
22055		Puja Mishra	Pharmaceutics	Vedika	MICRO AND NANO-BIOSENSORS AS MAJOR TOOLS IN DIAGNOSIS
22056		Sandeep Sahu	Natural Product Research	Vedika	PHYTOCHEMICAL AND PHARMACOGNOSTICAL SCREENING OF ACACIA ARABICA FOR ANTI-HYPERLIPEDEMIC ACTIVITY
22057		Shiv Mishra	Pharmacology	Vedika	MALARIA VACCINE: STRATEGIES AND CHALLENGES