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AICTE Sponsored national seminar on

“Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives”

19th October, 2013

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National Seminar

Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives

[19th October, 2013]

Seminar Proceedings

Venue: Smriti College of Pharmaceutical Education (SCOPE)
www.scopeindore.info, E. Mail: scopeindore@gmail.com
ABOUT THE INSTITUTE

Nestled on MR 11 near flourishing bypass, Smriti College of Pharmaceutical Education (SCOPE) was founded in 1999 and is spread across 6500 sq.m of lush greens. With a humble beginning a decade ago under the aegis of “B. R. Nahata Smriti Sansthan” (BRNSS) in the memory of late Mr. B.R. Nahata - a great social leader, parliamentarian and a renowned educationalist, Smriti College of Pharmaceutical Education, Indore has carved its niche in the domain of pharmaceutical education.

When it comes to research we have been at the forefront ever since we launched the first private player run post graduate program in pharmaceutical sciences in the state with phenomenal outcome in publication, presentations and research projects from budding pharmacists and research scholars. We advocate the skill – based education rather than rote learning or syllabus driven or exam oriented approach.
I express my sincere gratitude and extend a warm welcome to all the delegates of the AICTE sponsored, one day national seminar on “Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives” at Smriti College of Pharmaceutical Education, Indore, an upcoming center of excellence in the field of pharmaceutical sciences.

It gives me a great pleasure to invite the distinguished galaxy of speakers who have honored us by giving their precious time.

The seminar will serve as a platform to facilitate sharing of new ideas and to discuss about the recent updates in the field of traditional medicine research and standards to be followed by pharmacists to make the best use of our natural resources and contribute towards a better healthcare system.

Scientific conventions provide a broad forum for initiating as well as enhancing knowledge and grasping recent updates in any field. Research work on traditional medicines is also witnessing a myriad changes and various breakthrough developments have been made in the last few years. The convention will definitely provide us an idea about a few of such developments.

I sincerely thank the Scientific Committee for planning a very comprehensive program that will provide a privileged forum for discussions on advancements / innovations and for arranging the poster presentations session, covering distinctive themes of traditional medicine research.

I wish good luck to all the delegates and participants and definitely look forward to have a fruitful time.

Dr. Sanjay Jain
Chief Coordinator
Dear Prospective Participants,

Smriti College of Pharmaceutical Education, Indore presents its compliments and wishes for the success of AICTE sponsored national seminar on Drug Discovery and Development: Traditional medicine and Ethno pharmacology perspectives.

As a convenor of the event, it is my privilege to thank the team of dedicated individuals who have spent countless number of hours and days from their busy schedule to plan and pull-off this event successfully.

In today’s scenario, discovery of new drug has become imminent because of development of resistant species against treatment of various infectious diseases like TB, malaria etc. New drug discovery for cancer and other genetic disorders has become difficult because of the complex cellular processes involved. This Seminar will provide a new insight to students, research scholars, scientists and academicians about the role of traditional medicine as a novel approach for drug targeting and development tool.

I certainly hope that you enjoyed your participation and hope that you can get actively involved to promote traditional medicine and research to our younger generations and contribute to new drug discovery and development.

Sincerely Yours

Dr. Hari Haran A.G
It is indeed gratifying to welcome all the delegates to the AICTE Sponsored National Seminar on Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives on 19th October, 2013.

The theme of the national seminar is befitting the present scenario of Drug Discovery from natural source chiefly medicinal plants. I assure that the scientific session will offer herbal enthusiasts an implausible occasion to become skilled from the leading expert. Poster presentation session will provide an opportunity to budding researchers from different institute to present their novel research and express their institute potential in aforementioned theme.

I applaud all serving hands implicated in the endeavor.

Dr. Neelesh Malviya  
Head, Scientific Committee
MESSAGE

It's my great pleasure to welcome all the delegates to the AICTE sponsored national seminar on “Drug Discovery and Development: Traditional medicine and Ethnopharmacology perspectives” in Smriti College of Pharmaceutical Education, Indore. Traditional medicine has always fascinated human minds since time immemorial. Extensive research works have been done in the past and are still being done in order to give a modern and scientific appeal to the basic principles of holistic treatment. As the head of hospitality and media coverage committee, I wish all the delegates a pleasant stay in Indore and hope that this seminar will definitely go a long way in instilling novel thoughts and ideas in the minds of budding pharmacists in the field of traditional medicine.

Sincerely Yours

Mr. Rakesh Barik
Head,
Hospitality and Media Coverage Committee
**OBJECTIVES AND IMPORTANCE OF THE EVENT**

Traditional medicine can provide novel inputs into the drug development process. However, the search for economically valuable natural resources by pharmaceutical industries has achieved limited success in the recent years. This is due to the fact that current research in herbal drug discovery involves a multifaceted approach combining botanical, phytochemical, biological, and molecular techniques. Moreover, pertinent skills have become mandatory in major areas like procurement of plant materials, the selection and implementation of appropriate high-throughput screening bioassays, and the scale-up of active compounds. Hence, emphasis needs to be focused on development of new drugs, innovative processes for known drugs and development of plant-based drugs through investigation of leads from the traditional systems of medicine. This can be achieved by providing a common platform where industry and academic personnel together can share their experiences and provide an insight into the current requirements in drug development from herbal sources. Hence, this seminar is aimed at discussing the various challenges and opportunities in drug discovery from medicinal plants and practical handling of problems arising out of it.

**TOPICS DISCUSSED**

- Challenges and opportunities in drug discovery from medicinal plants.
- Modern Phytomedicine: Turning medicinal plants into Drugs.
- Recent advancement in technology for the extraction, fractionation and isolation of lead compound from medicinal plants.
- Scientific validation of traditional claims of Indian medicinal plants.
- Preclinical and Clinical screening methodologies.

**OUTCOME**

The knowledge gained from the experiences of the invited resource persons can be utilized to understand various challenges and opportunities in drug discovery from medicinal plants so that the future of natural product drug discovery becomes more holistic, personalized and involve wise use of ancient and modern skills in a complementary manner in order to ensure maximum benefit to the society.
LOCAL ORGANIZING COMMITTEE

PATRON
Shri Narendra Nahata

CHIEF CO-ORDINATOR
Dr. Sanjay Jain

CONVENOR
Dr. AG Hariharan

SCIENTIFIC COMMITTEE
Dr. Neelesh Malviya
Mr. Sudhakar C.K
Ms. Anjali Khandelwal

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Mr. Avnish Jain
Mr. Hemant Khambete
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Mrs. Niharika Gokhale

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Mrs. Anu Harde
Mrs. Sheetal Trivedi

MEDIA COVERAGE
Mr. Rakesh Barik
Mr. Sumeet Prachand

TECHNICAL SESSION COMMITTEE
Dr. Amit Gangwal
Ms. Sonali Jayronia

EMINENT GUEST SPEAKERS
Prof. (Dr.) V. K. Dixit
Dean & Academic Head, Bhagyoday Tirth Pharmacy College, Sagar
(Retd. Professor & Former Head Department of Pharmaceutical Science, Dr. H.S. Gour University Sagar)

Dr. Shailendra Saraf
Prof. Dept. of Pharm. Sciences,
Pt. Ravishankar Shukla University, Raipur

Professor Swarnlata Saraf
Dean, Dept. of Pharm. Sciences,
Pt. Ravishankar Shukla University, Raipur

Dr. Satish Nayak
Principal, Bansal College of Pharmacy, Bhopal

Mr. Shashi Alok
Assistant Professor, Dept. of Pharm. Sciences, Bundelkhand University, Jhansi

EMINENT CHIEF GUESTS
Mr. Saket Sharma
HR Manager Ranbaxy
Ranbaxy Laboratories Limited, Dewas, India

Dr. SB Rijwani
Director, Promed Pvt. Ltd., Indore

Mr. Himanshu Shah
Director, Vishal Pharma, Indore
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AN OVERVIEW STUDY OF POISONOUS PLANTS
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ABSTRACT
The objective of this review article is to provide a description on toxic plants causing various diseases. The variety and wide distribution of many highly toxic plants in India constitute a serious problem. The existing lack of knowledge of the chemical nature of the substances causing this toxicity offers a stimulating challenge to chemists and pharmacologists. A toxic substance means any chemical or mixture that may be harmful to the environment and to human health if inhaled, swallowed, or absorbed through the skin. Toxicity refers to the ability of a substance to induce harmful effects. In general, all substances are toxic or poisonous; however, at normal levels, these substances are considered allowable or safe. Hence, toxicity is the level above the allowable limit. This article overviews an important evaluation of the literature to show that the toxic parts, primary poisons and chemical structure of the plants.

KEYWORDS: Toxicity, Primary poisons, Chemical structure, Botanical name, Common name.
EXTRACTION PROCESSES USED TO EXTRACT OUT THE PHYTOCONSTITUENTS
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ABSTRACT

Plants are the source of large amount of drugs comprising to different groups. A large number of the plants are claimed to possess the therapeutic properties in the traditional system and are used by people worldwide. In this review, we have examine an important recent rule-based information on extraction techniques. Today the researchers are emphasizing on evaluation and characterization of various plants and plant constituents against a number of diseases and are also used extensively by the tribal people in the world. Extraction of the bioactive plant constituents has always been a challenging task. Commonly used as well as novel methods of extraction are effective in advancing the development of traditional herbal remedies. Various techniques for extraction including such as - expression, infusion, decoctions, maceration, hot percolation, cold percolation, high pressure-supercritical fluid extraction, steam distillation, assisted extraction, counter current correspondence, accelerated solvent extraction have been developed for the extraction of neutraceuticals from plants in order to shorten extraction time, decrease solvent consumption, increase the assurance, pioneer extraction yield and enhance the quality of extracts. The automatic extraction of information from unstructured sources has up new avenues for querying, organizing, and analyzing data by drawing upon the clean semantics of structured databases and the abundance of unstructured data. In this abstract, an attempt has been made to give an overview of certain extraction processes for procuring active metabolites from different phytoconstituents whether the drugs are organized or unorganized.
ABSTRACT

The present study was aimed to formulate enhancement of bioavailability of Curcumin in novel carrier to overcome the poor aqueous solubility of Curcumin. Curcumin is the principal curcuminoid of the popular Indian spice turmeric, which is a member of the ginger family (Zingiberaceae). Herbal medicines have been increased all over the world due to their therapeutic effects and fewer adverse effects as compare to the modern medicines. Use of herbal formulations for novel drug delivery systems is more advantageous and has more benefits compared to others. Curcumin has antioxidant, anti-inflammatory, antiviral and antifungal actions, Studies have shown that Curcumin is not toxic to humans. Topical administration of Curcumin loaded herbal formulation prevents to acne vulgaris. In this paper, mentioned the Curcumin effects on skin as prevents to acne. Curcumin microspheres are herbal formulation which applies on the skin for the prevention of acnes.
HERBAL PLANT HAVING ANTICANCER EFFECT
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ABSTRACT
Cancer is an abnormal growth and proliferation of cells. It is a frightful disease because the patient suffers pain, disfigurement and loss of physiological processes. It is caused by a complex, poorly understood interplay of genetic and environmental factors. In this article attempt has been made to review medicinal plant having anticancer activity. These plants may promote host resistance against infection by re-stabilizing body equilibrium and conditioning the body tissues. As compared to allopathic drug, medicinal plant are easily available, cheaper and possess no toxicity. With the advance knowledge of molecular science and the refinement in isolation and structure elucidation techniques we are now in position to identify various anticancer herbs. The phytochemical exploration of this herb discovers new anticancer drugs. These herbs active principles inhibit the growth and spread of cancer and possess anti cancer, immunoenhancing, antiangiogenesis, antioxidant and antimutagenic effect. The therapeutic effect of these herbs is executed by the complex synergistic interaction among their various active principles. Some important anticancer herbs in this article are: (Taxol, Colchium, Periwinkle, Hemp, Camptotheca and Mayapple). Although drug discovery from medicinal plant continues to provide an important source of new drug, it leads to numerous challenges and encounter problems including procurement of plant material and their selection.
A REVIEW ON NATURAL ALTERNATIVE: AN OPTION FOR TREATING MENOPAUSAL ‘HOT FLASHES’

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ABSTRACT

About 1/3 of female lives pass beyond the menopause with several menopausal symptoms like Hot flashes, Vertigo, Nervousness, Depression, Fatigue, Sweating, Sleep Disturbances, Headache, Tachycardia, Vaginal dryness. A hot flash as warm/hot sensation with objective sign cutaneous vasodilatation such as flushing and sweating are observed. Nearly 60% of women report them before any menstrual changes. With gradual increase with knowledge associated with side effects and risk factors like uterine and breast cancer with conventional therapies; women are more attributing towards natural therapies. Several natural therapies promise in treating hot flashes without emerging side effects and risk factors associated with conventional allopathic therapy. The three isoforms; Isoflaves, Ligans and Coumestans of phytoestrogen derived from dietary and botanical sources such as Isoflaves from soy and legums such as beans and chickpeas; Ligans from wheat, barley, oats etc and fruits such as apple, pear, cherry etc; Coumestans from bean sprouts, alfalfa, clovers and from other botanical sources like roots and rhizomes of Black cohosh, Red clover etc can be used in treating hot flash and may also decrease the risk of endometrial and breast cancer. With the information available to date, menopausal women can be encouraged to explore alternative approaches to alleviating hot flashes.
A REVIEW ON ROLE OF PHYTOSOMES IN HERBAL DRUG TECHNOLOGY
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ABSTRACT
The term “phyto” means plant while “some” means cell-like. The phytosome technology markedly enhances the bioavailability of phytomedicines. Phytosomes are advanced form of herbal formulations that are better absorbed, and as a result produced better bioavailability and actions than the conventional herbal extracts. This is advanced form of herbal formulations which contains the bioactive phytoconstituents of herb extracts surrounds and bound by lipid. Most of the bioactive constituents of phytomedicines are water soluble compound like flavonoids, glycosides, terpenoids in which flavonoids are major class of bioactive compounds possesses broad therapeutic activities. Because of water soluble herbal extract and lipophilic outer layer phytosomes show better absorption and as a result produce better bioavailability and actions than the conventional herbal extract containing dosage form. They are produced by a patented process where by the standardized plant extract or its constituents are bound to phospholipids, Mainly phosphatidylcholine producing a lipid compatible molecular complex. This phyto-phospholipid complex (phytosomes) resembles a little cell.
A REVIEW ON PLANT HORMONE
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ABSTRACT
Hormones are messengers. They are produced and secreted by cells in order to control the activity of other cells at distant part of the organism. Research into hormones was at first intensely occupied with animal hormones. Hormones regulate cellular processes in targeted cells locally and, when moved to other locations, in other locations of the plant. A few years hence the picture presented here will change materially. We have just started to work with a new tool that should aid in probing further the secrets of plant development.
Plant hormone, are like animal hormones, are produced in very small quantities in one part of the organism and moved to another part where they become active. The word hormone is derived from Greek, meaning set in motion. Plant hormone affects gene expression and transcription levels, cellular division, and growth. They are naturally produced within plants, though very similar chemicals are produced by fungi and bacteria that can also affect plant growth. A large number of related chemical compounds are synthesized by humans. They are used to regulate the growth of cultivated plants, weeds and in vitro-grown plant and plant cells; these manmade compounds are called PLANT GROWTH REGULATORS or PGRs for short. Early in the study of plant hormones, “phytohormone” was the commonly used term, but its use is less widely applied now. Hormones are vital to plant growth, and lacking them, plant would be mostly a loss of undifferentiated cells. So they are also called as growth factors or growth hormones. Without plant hormone, plant would be unable to grow and reproduce. Just as every other living thing need hormones for development, plant are not functional without their hormones. The importance of plant on the earth makes these hormones an essential component of life for everyone.
A REVIEW ON - “STANDARDIZATION OF HERBAL DRUGS”
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ABSTRACT
In recent year more people throughout world are turning to use medicinal plant products in healthcare system. Worldwide need of alternative medicines has resulted in growth of natural product market and interest in traditional system of medicines. Herbal drug technology is used for converting botanical materials into medicines, where standardization and quality control with proper integration of modern scientific techniques and traditional knowledge is important. Herbal formulations have reached extensive acceptability as therapeutic agents for several diseases. The development of authentic analytical methods which can reliably profile the phytochemical compositions, including quantitative analyses of marker/bioactive compounds and other major constituents, is a major challenge to scientists. Standardization is an important step for establishment of consisting biological activity, a consistence chemical profile, or simply a quality assurance programme for production and manufacturing of herbal drugs.
A REVIEW ON HERBS AND THEIR INTERACTION
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ABSTRACT
There are many herbal myths are present in society, people think that every herbal product is safe but always it is not true. Herbal medicine shows interactions like herb- drug, herb- herb, and herb & food interactions. Herbal medicines have enormous presence worldwide. Herbs are listed under the “supplement” category by the food and drug administration in the USA. Many medical research, in general has not addressed this new group of the health supplements, despite the fact that many of these herbs have the potential to cause serious health problems and herbal interactions. There is a need to conduct scientific clinical trials to study. Herb-drug interactions are a hot topic of debate and herbs are coming under increasing attack for being potentially dangerous to patients who are already taking prescription medications. The concerns are multiplied for those patients currently taking multiple medications often prescribed by multiple physicians and they may or may not be in communication with each other regarding their medical reasoning. Expert suggests that natural drug not mean that they are completely safe.
DNA BASED MOLECULAR MARKERS: A BREAKTHROUGH IN AUTHENTICATION OF HERBAL DRUGS

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ABSTRACT

Herbal drug technology involves conversion of botanicals into medicinal products. Correct identification, standardization and quality assurance of herbal drugs is necessary to maintain safety and efficacy of herbal products. Major issue associated with quality and safety of herbal drugs is adulteration, substitution with inferior varieties and misidentification. Regulatory guidelines and pharmacopoeias suggest macroscopic and microscopic evaluation and chemical profiling of the botanical materials for quality control and standardization, but these techniques have certain limitations. DNA based techniques have been widely used in the authentication of herbal drugs. This review provides a brief account of various DNA based molecular techniques such as Restriction fragment length polymorphisms (RFLPs), Random amplified polymorphic DNA (RAPD), Arbitrarily primed PCR (AP-PCR), DNA amplification fingerprinting (DAF), Amplified fragment length polymorphism (AFLP), Sequence characterized amplified regions (SCARs) that are used in correct identification of herbal drugs and also list of all medicinal plants which have been authenticated using these biotechnology driven techniques.
PROTECTIVE EFFECT OF *ERYTHRINA INDICA LAM* ON ANTIOXIDANT STATUS IN CYCLOPHOSPHAMIDE INDUCED CARDIOTOXICITY IN RATS

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ABSTRACT

The current communication was designed to assess the cardio toxicity effect of the ethanolic seeds extract of *Erythrina Indica LAM* (100 mg/kg body weight, administered orally for 10 days) on cyclophosphamide (CP) provoked oxidative injury in rat heart. CP cardio toxicity, induced by single intraperitoneal injection (200 mg/kg body weight), was revealed by elevated serum levels of creatinine phoshphokinase (CPK), lactate dehydrogenase (LDH), aspartate transaminase (AST) and alanine transaminase (ALT). CP induced rats, treated with SC depicted near normally in these parameters. In the CP group, increased oxidative stress was evidenced by a significant rise in hepatic malondialdehyde (MDA) level and decline in superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione reductase (GR), glutathione-S-transferase (GST) and reduced glutathione (GSH) activities in the myocardial tissue. SC treated rats displayed a significant inhibition of lipid peroxidation (LPO) and augmentation of endogenous antioxidants. These results give credence to the notion that treatment with *Erythrina Indica LAM* extract ameliorates CP induced cardio toxicity and might serve as a novel combination therapy with CP to combat oxidative stress-mediated hepatic injury.

KEYWORD- Cyclophosphamide, *Erythrina Indica LAM*, Marker enzyme, antioxidant enzyme.
ARISTOLOCHIC ACID: A HERB DANGER- GIVE A HAULT!!

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ABSTRACT

Aristolochia, an ornamental plant (meaning: the best delivery or birth) is an ancient Chinese herbal drug and has been used since ancient times in traditional herbal medicines in many parts of the world. Its one of the most important constituents aristolochic acid has been reported as antifungal, antibacterial and antiviral constituent present in different species. Aristolochic acid is found primarily in the plant Aristolochia, but may be present in other botanicals also. Other traditional uses are in the treatment of obesity, snakebite, fever, infection, diarrhoea, cancer, etc. Consumers have been advised that these products may have been sold as "traditional medicines" or as ingredients in dietary supplements. Recently it has been reported that aristolochic acid causes other types of genetic damages in mammalian metabolic activation along with DNA damage. In mammalian cells exposed in vitro, aristolochic acid mixture causes chromosomal aberration, sister chromatids exchange etc. Due to potential serious public health risks such as human lymphocytism, urothelial cancer etc., consumers of aristolochic acid products have been advised to stop its use in different herbal products. Thus, on summarizing the above part, based on informative reviews, consumers cannot be assured for the products containing aristolochic acid unless it has been confirmatorily tested.
STANDARDIZATION OF AYURVEDIC FORMULATION RAJAHPRAVARTINI VATI
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ABSTRACT
Rajahpravartini Vati is used for the treatment of Dysmenorrhoea and Symptoms associated with Dysmenorrhoea such as cramping, pain in back lower Abdomen and thighs. The quality of the herbal medicines is the sum of all factors which contribute directly or indirectly to the safety, effectiveness and acceptability of the formulation. On the basis of literature survey it was found that standardization parameters was not established for the selected formulation. “So, present research work envisaged to develop quality control methods and parameters for selected ayurvedic formulation Rajahpravartini vati”. In the present work, we have purified the Tankana (borax) and also investigated the qualitative determination of Aloin isolated from Aloe vera. The Qualitative estimation was carried out by thin layer chromatographic (TLC) method.
STANDARDIZATION OF POLYHERBAL FORMULATION FOR HAIR GROWTH
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ABSTRACT
Hair oils are the hair care preparations used for the prevention and treatment of baldness or other ailments, aggression of hair. They also promote the luxurious growth of hairs. Hair oil containing herbal drugs are used as hair tonic. The objective of present study involves preparation of herbal hair oil using amla, hibiscus, brahmi, methi and its evaluation for increase in hair growth activity. Each drug was tested for their hair growth activity in a concentration range for 1-10% separately. Based on these results mixture of crude drugs leaves of as *Azadirachta indica*, fruits of *Semecarpus anacardium*, kernel oil of *Cocos nucifera* and seeds of *Trigonella foenumgraecum* were prepared in varying concentration in the form of herbal hair oil. The oil of different concentrations were characterized for proximate analysis including moisture content, total ash, acid insoluble ash, water soluble ash, water insoluble ash, sulphated ash. The formulations were also subjected to chromatographic determination and chemical tests to determine the presence of active constituents in the drugs.
EFFECT OF AQUEOUS ENRICHED FRACTION OF PREMNA INTEGRIFOLIA ROOT AGAINST CAFETERIA DIET INDUCED OBESITY IN SWISS ALBINO MICE

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ABSTRACT

The objective of the present study was to evaluate the effect of aqueous enriched fraction of Premna integrifolia root (AEFPIR) against cafeteria diet induced obesity in Swiss Albino Mice. Female Swiss Albino mice were divided into four groups, which received cafeteria diet, standard drug simvastatin (10 mg/kg) and AEFPIR (200 and 400 mg/kg) daily for 40 days. The body weight, body mass index (BMI), food consumption, serum glucose, triglyceride, total cholesterol, high density lipoprotein (HDL), low density lipoprotein (LDL) and very low density lipoprotein (VLDL) were studied along with histopathological assessments for screening the effect of AEFPIR against cafeteria diet induced obesity. HPLC fingerprint profile of AEFPIR was also studied using quercetin as the reference standard. The results of present study revealed that, there was a significant decrease in body weight, BMI, food consumption and in the levels of serum glucose, triglyceride, total cholesterol, LDL, and VLDL with a significant increase in the level of HDL in mice treated with simvastatin and AEFPIR groups compared with cafeteria diet group. Mice treated with AEFPIR shows dose dependent effect. The AEFPIR (400 mg/kg) supplementation attenuated all the above alterations, which indicates the protective effect against cafeteria diet induced obesity that was further confirmed by histopathological analysis. The solvent system was used for HPLC fingerprint profile of AEFPIR, 50 Mm potassium diphosphate (pH-3 with ortho phosphoric acid): Methanol (50:50 v/v) at 360 nm. The chromatograph showed three peaks at retention times 3.835, 5.649 and 11.106. The present study suggests that, AEFPIR possess protective effect against cafeteria diet induced obesity that was substantiated its ethno-medical use in the treatment of obesity. The exploration of chemical constituents and further pharmacological evaluation will give us basis for its therapeutic use. Further series of studies are required to prove its clinical reliability, safety and efficacy.
NATURAL HERBS AS INDICATOR IN ACID-BASE TITRATIONS
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ABSTRACT
Today synthetic indicators are the choice of acid-base titrations. But due to environmental pollution, availability and cost, the search for natural compounds as an acid-base indicator was started. The present review highlights the many herbal plants of medicinal properties use as indicator in acid-base titrations. This natural indicator is easy to extract as well as easily available. Herbal indicators shows promising results were obtained when it was compared against standard synthetic indicators. Titration shows sharp color change at the equivalence point. The equivalence points obtained by the flowers extract coincide with the equivalence points obtained by standard indicators. These natural indicators are found to be a very useful, economical, simple and accurate for titration due to nontoxic nature.

KEYWORDS: Acid-base Titration, Herbal Indicator, equivalence point
STANDARDS AND REGULATION OF HERBAL DRUGS
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ABSTRACT
Herbal drugs and formulations have reached extensive acceptability as therapeutic agents for several diseases. The development of authentic analytical methods which can reliably profile the phytochemical composition, including quantitative analyses of marker/bioactive compounds and other major constituents, is a major challenge to scientists. Generally it is believed that the risk associated with herbal drugs is very less, but reports on serious reactions are indicating to the need for development of effective marker systems for isolation and identification of the individual components. Standardization and quality control for herbal drugs are feasible, but difficult to accomplish. Further, the regulation of these drugs is not uniform across countries. There are variations in the methods used across medicine systems and countries in achieving stability and quality control. The present review shows to identify the development of technical standards in manufacturing and the regulatory guideline development for herbal drugs.

KEYWORDS: Herbal drugs, marker component, efficacy
QUANTITATIVE ESTIMATION OF TANNINS IN *Ficus Carica* L. USING SPECTROPHOTOMETER

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*Ficus carica* L. (Syn: *Ficus sycomorus*; family: Moraceae) is grows in tropical and subtropical regions of India, used for varity of purpose in traditional medicine. *Ficus carica* (anjeer) is an indigenous plant to India, which finds its mention not only in Indian system of medicine i.e. Ayurveda but also in other system of medicine like Unani etc. The usefulness of this plant is scientifically evidenced, and different biologically active phytoconstituents are reported and also isolated form plant. But no reports are available on qualitative and quantitative studies of the phytoconstituents like tannins. Hence the present attempt was undertaken to investigate the quantitative estimation of tannins present in this drug using folin-denis method. Tannin-like compounds reduce phosphotungstomolybdic acid in alkaline solution to produce a highly coloured blue solution, the intensity of which is proportional to the amount of tannins. The intensity is measured in a spectrophotometer at 700nm. Tannin contents of plants were measured by Folin-Denis method. The tannin concentration was determined by the standard graph of tannic acid solution. The present study can be used as one of the parameters for standardization of medicinal plants. Further study is necessary to understand the factors which may affect the production of tannins.
IMPACT OF SCREENING AND IDENTIFICATION OF MEDICINAL PLANT IN DRUG DISCOVERY

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ABSTRACT

In the present scenario the screening and identification of medicinal plant is very important for the new drug development and discovery. Now a day’s herbal plant is use for the treatment of various diseases but due to their non availability of scientific prove it become not popular. Plants have been known to relieve various diseases in Ayurveda. The main need on today is emphasizing on screening of bioactive constituents and identification against a number of disease. The plants are easily available, less expensive, safe, and efficient and rarely have side effect. It contains some natural products which perform definite physiological action on the human body and these bioactive substances include tannins, alkaloids, glycosides, carbohydrates, terpenoids, steroid and flavonoids. These compounds are synthesized by primary or rather secondary metabolism of plants. Secondary metabolites are chemically and taxonomically extremely diverse compounds with obscure function. A finding of new bioactive chemical entities from natural sources. Natural products still play a major role as starting material for drug discovery. The drug discovery include new candidate medications using identifying the active substances that have a desirable therapeutic effect. The phytochemical screening includes tracing plant constituents and their medicinal benefits. It helps in drug discovery via identification of screening hits, medicinal chemistry and optimization of those hits to increase the affinity, selectivity (to reduce the potential of side effects), efficacy/potency, metabolic stability (to increase the half-life), and oral bioavailability.

KEYWORDS: Drug discovery, Phytochemical screening, Identification,
ABSTRACT

Pharmacovigilance is the science and activities relating to the detection, evaluation, understanding and prevention of adverse drug reactions or any other drug-related problems. Ayurveda, the knowledge of life, immortalized in the form of elegant Sanskrit stanzas in the samhitas describe diagnosis and therapy of disease as well as ways to maintain positive health. The use of ayurvedic medicines is popular in India - and in recent times has become accepted in other countries. Yet, the number of adverse reactions to ayurvedic drugs reported or recorded in the National Pharmacovigilance Program in India is negligible. The strong belief that ayurvedic medicines are safe contributes to a large extent to this situation. To compound this matter is the lack of knowledge about the concept and importance of pharmacovigilance in ayurveda among ayurvedic practitioners. The objective of the present article is to provide a succinct review on the recent trends and challenges posed in the practice of pharmacovigilance of ayurvedic medicines especially in the Indian context and to shed light on the importance of pharmacovigilance practice in establishing and maintenance of rational use of drugs within the ambit of pharmacotherapy. The methodology adopted in the undertaken work comprises extensive topic related search of contemporary scientific articles and complementary review of bibliographies from selected publications on the subject. Thus, in summary this paper attempt to describe ayurvedic concepts of adverse reactions to medicines, the need for pharmacovigilance of ayurvedic medicines, challenges in introducing pharmacovigilance in ayurveda and some recommendations to successfully implementing these activities.
STANDARDIZATION OF CEPHAELIS IPECACUANHA ACCORDING TO WHO GUIDELINES
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ABSTRACT
Cephaelis ipecacuanha (Rubiaceae) are used in the Indian system of medicine as an expiratory and emetic. The present study was undertaken to screen phytochemical of Roots of Cephaelis ipecacuanha. In the study the aqueous and ethanolic extract of root was prepared using distilled water and ethanol as a solvent. The phytochemical screening of aqueous and ethanolic extract of Cephaelis ipecacuanha root by employing standard methods for conducting qualitative phytochemical analysis for studying the presence of active compounds like glycosides, alkaloids starch, tannins and mucilage. The glycosides and alkaloids are detected in both extracts and other constituents like tannins detected in ethanolic extract. and starch and mucilage detected in aqueous extract.

KEYWORDS: Cephaelis ipecacuanha, Ethanol, Phytochemical screening, expiratory and emetic.
PHYTOCHEMICAL SCREENING OF AQUEOUS AND ETHANOLIC EXTRACT OF 
CINNAMOMUM ZEYLANICUM BARK

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ABSTRACT

Cinnamomum zeylanicum Nees. (Lauraceae) are used in the Indian system of medicine as an anti-microbial and anti-fungal. The present study was undertaken to screen phytochemical of bark of Cinnamomum zeylanicum. In the study the aqueous and ethanolic extract of bark was prepared using distilled water and ethanol as a solvent. The phytochemical screening of aqueous and ethanolic extract of Cinnamomum zeylanicum bark by employing standard methods for conducting qualitative phytochemical analysis for studying the presence of active compounds like glycosides, carbohydrates, volatile oils, starch, tannins and mucilage. The glycosides and carbohydrates are detected in both extracts and other constituents like volatile oil and tannins detected in ethanolic extract and starch and mucilage detected in aqueous extract.

KEYWORDS: Cinnamomum zeylanicum, Ethanol, Phytochemical screening, anti-microbial and anti-fungal.
DETERMINATION OF SUN PROTECTION FACTOR OF VARIOUS HERBAL DRUGS
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ABSTRACT
Light is essential for the survival of all living things as various metabolic, endocrine, and physiological processes are dependent on exposure to sunlight, but in the Indian scenario where exposure to sunlight is high, it is well known fact that over exposure of the UV radiations mainly UV-A and UV-B indices for skin hazards such as Sunburn, cutaneous degeneration, photosensensitivity, phototoxicity, premature skin aging and an increased risk for skin cancers due to immune suppression & oxidative stress. Earlier investigation evidenced that UV radiation is known to cause distinct mutations in keratinocytes that ultimately contribute to the development of the non-melanoma skin cancers, which include basal cell carcinoma (BCC) and squamous cell carcinoma (SCC). Herbal extract which contains phytoconstituents like flavonoids, tannins, anthraquinones and cinnamate, beta-carotene, amino acid L-Canavanine etc. have valuable role to protect skin from UV radiation and their ability to protect skin from the UV radiation is termed as the Sun Protection Factor. Sun protection factor is a quantitative methodology measure of the effectiveness of phytoconstituents; the higher the SPF, the more protection an extract offers against the ultraviolet radiations causing sunburn. The aim of the present research was to evaluate ultraviolet (UV) absorption ability of various plant extract which can be used in sunscreens or cosmetics and express the same in terms of sun protection factor (SPF) values. Plant extracts of *Alfa-alfa, Hathjod & Jatropa* were taken & diluted serially and their SPF was determined by UV spectrophotometry applying Mansur mathematical equation. The SPF labeled values was in the range of 2 to 40. It was concluded from the result that the herbal extract of Alpha-Alpha showed maximum sun protection factor as compared to Hathjod & Jatropa and the present study is a building step towards the development of quality control methods for herbal products.
**ABSTRACT**

Medicinal plants were used in India for centuries as an important therapeutic source for treating wide variety of ailments and have been found to be of immense global importance. The family *Dioscoreaceae* consists of several important medicinal plants with wide range of pharmacological, biological activities and interesting phytochemical constituents. The species *Dioscorea bulbifera* Linn. is commonly found in India, Brazil, East Africa, Ceylon, Malaya peninsula, Latin America etc. The present study on *Dioscorea bulbifera* Linn. tuber deals with the macroscopical and microscopical details including powder microscopy. Some important and distinct diagnostical characters were observed with sections of matured tuber. The anatomy of tuber was studied by taking transverse sections. Narrow and indistinct epidermal layer, wider cortex with compact and dilated cell containing tannin, thin and less conspicuous periderm, central pith of circular and compact parenchyma cells and large cylindrical and elliptical starch grains were observed. Powder microscopy of the powder revealed the presence of bundles of xylem element and thick walled parenchyma cells. Physicochemical parameters and preliminary photochemical screening was done on the tuber. The present Pharmacognostical study on the tubers of *Dioscorea bulbifera* Linn will provide the necessary informations regarding the identification of this drug, which will be further helpful in acceptability of this plant worldwide.

**KEYWORDS:** *Dioscorea bulbifera*, tuber, microscopy.
ABSTRACT

The present study compiled the formulation and standardization of polyherbal liver syrup named “LivPro” followed by in-vivo and in-vitro hepatoprotective activity of LivPro in CCl₄ intoxicated rat. Polyherbal liver syrup named “LivPro” was formulated by using the lyophilized ethanolic extract of A. millefolium flowers, C. spinosa stems, C. intybus seeds and P. kurroa rhizomes. Further the standardization of polyherbal liver syrup LivPro was performed following the guidelines of WHO and Indian Pharmacopoeia. Wistar albino rats were treated with vehicle, silymarin (20 mg/kg) and LivPro at 5, 10 and 15 ml/kg, p.o. continuously for 14 days. CCl₄ was administered on every alternate day for a week. Animals were access for thiopental induced sleeping time, bromosulphthalein uptake, biochemical analysis of serum for marker enzymes and free radical scavenging ability of liver along with histopathology of liver. Results postulated that the developed liver syrup LivPro was dark brown colored, bitter in taste and had a characteristic bitter odor. The results obtained from study indicated that the formulation had pH value 5.04, specific gravity 0.8269; viscosity 78.01 poise, relative density 1.271 gm/ml and refractive index 1.432. Quantitative estimation of phytoconstituents indicated that LivPro have rich quantity of flavonoid (480 mg/gm), total phenol (396 mg/gm) and alkaloid (103 mg/gm). The concentration of lead and arsenic in the tested formulation was found to be within limit, confirms the non toxic nature of the formulation. The total plate count and viable aerobic microbial count in formulation were 480 and 415 CFU/gm and the yeast and mould count was less than 100 CFU/gm. Pre and post treatment of LivPro resulted in the significant decrease (P<0.01 and 0.001) in relative weight of liver. LivPro showed extremely significant (<0.001) decrease in thiopental induced sleeping and 76.19% hepatoprotection in bromosulphathalein uptake test. Treatment with LivPro (10 and 15 ml/kg) resulted in significant normalization (P<0.01 to 0.001) of biochemical parameters except albumin. Kaempferol showed significant elevation (P<0.001) of glutathione and reduction (P<0.001) in lipidperoxidase enzymes in liver tissue. LivPro (15 ml/kg) treatment showed complete recovery of hepatocytes with reduced vacuolations, normal hepatocytes, clear cell lining as well as absence of multinucleated giant cell. The results indicate the protective and curative effect of LivPro on CCl₄ induced hepatotoxicity, which may be mediated through enhanced antioxidant defiance status, anti-inflammatory and immune modulating properties of different contituents present in the LivPro. The findings of this study suggest that LivPro can be used as a safe and effective alternative chemopreventive agent in the management of liver disorders.
IS HERBAL DRUG DELIVERY SYSTEM PROMISING THERAPEUTICS DELIVERY SYSTEM?
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ABSTRACT
Herbal drug delivery system legitimate alternative system of therapy for much disease treatment. The proclivity of incorporating Novel drug delivery system (NDDS) for herbal drugs as it provides competent and cost-effective drug delivery. A broad research is going on in the area of NDDS and TDDS for plant actives and extracts. The success of any herbal drugs is reliant on the delivery system. Bioavailability can be enhanced by using NDDS which can augment the rate and the extent of solubilization into aqueous intestinal fluids and the competence to cross biomembranes. Herbal novel drug delivery systems comprise vesicular delivery systems has widely studied using liposomes as carriers. Herbosomes as oral formulation of herbs drugs and Phytosomes as topically applied formulation containing herbal drugs. Innovative formulation aids the success of the herbal drugs for their therapeutics efficiencies

KEYWORDS: - NDDS, Herbal drug delivery system
ROLE OF HERBS IN COSMETICS
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ABSTRACT
The function of ayurvedic herbs is to purify skin and eliminate vitiated Doshas from the body as they are mainly responsible for skin disorders and other diseases. With the science of ayurveda, several herbs and floras were used to make ayurvedic cosmetics that really worked. Ayurvedic cosmetics not only beautified the skin but acted as the shield against any kind of external affects for the body. Ayurvedic cosmetics also known as the herbal cosmetics have the same estimable assets in the modern era as well. The best thing of the herbal cosmetics is that it is purely made by the herbs and shrubs. The natural herbs are less toxic, lesser expensive and easy availability in the nature with quality of healing, protecting and adornment with fewer side effects on the human body; instead enrich the body with nutrients and other useful minerals.

The science of alteration of appearance is well known as ‘Cosmetology’. Since that any material used for beautification or improvement of appearance is known as cosmetic. The urge to adorn one’s body and look beautiful has been an urge in the human race since the tribal days. Earlier both males and females were equal competitors for improvement of appearance. In this review the use of herbal drugs like Neem, Apple, Sandal Wood, Cactus, Aloe Vera, Turmeric & Tulsi. This review is an attempt to glance the good properties of herbal drugs and let the increase use in cosmetic products.

KEYWORDS: Natural cosmetics, ayurvedic, cosmetics and herbs.
EFFECT OF FICUS CARICA FRUIT EXTRACT ON EXPERIMENTALLY INDUCED INFLAMMATION AND NOCICEPTION

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ABSTRACT

In the present study, the effects of fruits of Ficus carica (Moraceae) on experimentally induced inflammation and nociception were studied. Aqueous and ethanolic extracts (200 and 400 mg/kg orally) were tested in carrageenan and egg albumin-induced rat paw oedema, and acetic acid-induced writhing, hot plate reaction and tail immersion time in experimental rats. The paw volumes and writhes in experimental rats were reduced significantly (p < 0.01) as compared to that of control, and hot plate test showed significant licking effect in rats. The results obtained clearly indicate that the fruits of Ficus carica could be a potential source of anti-inflammatory and antinociceptive agent.
A BIOLOGICAL EVALUATION OF ANTI-INFLAMMATORY AND ANALGESIC ACTIVITIES OF ARGEMONE MEXICANA L. (PAPAVERACEAE) AQUEOUS AND CHLOROFORM FRACTIONS

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ABSTRACT

The present study deals with evaluation of the anti-inflammatory and analgesic properties of aqueous and chloroform fraction of argemone mexicana. The anti-inflammatory study was done by using Formalin-induced paw edema method while the effect of the both fractions on analgesic activity was investigated on hot plate method and tail flick method in rats. 200mg/kg of A. Mexicana both fractions shown significant (p<0.05) anti-inflammatory while 200mg/kg A. Mexicana both fractions shown significant (p<0.05) analgesic activity as compared to diclofenac sodium. The aqueous and chloroform fractions have shown no toxic effect up to 1000 mg/kg body weight of Wister male rats. It may be concluded that the aqueous and chloroform fractions of argemone mexicana has antiinflammatory and analgesic potential and have no toxic effect. The results obtained in this study lend credence to the ethnomedical use of the plant in the management of pain and inflammatory conditions. Thus, supporting the development of the biologically active substances as analgesics and anti-inflammatory agents.
PHARMACOVIGILANCE OF HERBAL MEDICINE: CURRENT CHALLENGES FOR RATIONAL USE

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ABSTRACT

Pharmacovigilance is essential for developing reliable information on the safety of herbal medicines. Plants contain a large number of biologically active chemicals, some of these have been found to be extremely useful for treating various human and animal diseases. However, some plant constituents produce adverse health effects following exposure. The onset of these adverse effects can be quite, sudden or take some time to develop. Herbal drugs have got tremendous momentum in global health care system. The use of the herbal medicines has become a part of the main stream all over the world. Independent scientific assistance on toxicological investigation, botanical verification can be invaluable for full evaluation of any case report. Systematic pharmacovigilance is essential to build up reliable information on the safety of herbal medicines for the development of appropriate guidelines for safe effective use. Consumers generally consider herbal medicines to be safe and view them as natural alternatives to traditional medications. Herbs ranked in the top five categories having potentially life-threatening side-effects include liver toxicity, renal toxicity, cardiotoxic and carcinogenic etc. However, it must be remembered that few negative side-effects occur from herb products in comparison to pharmaceuticals, and these relatively few adverse events observed from plants should not used by the pharmaceutical industry and/or medical profession to campaign for the protection of millions of dollars placed into synthetic drugs that might be replaced overnight by an unpatented herb. Here is an attempt to critically review the serious World scenario of herbal drugs induced toxicity and to promote the rational use of herbal medicines for community health.

KEYWORDS: Herbal, Toxicity, Rational Use of Herbal Medicine
STANDARDIZATION OF PANCASAMA CHURNA: A POLYHERBAL FORMULATION
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ABSTRACT
The recent global resurgence of interest in herbal medicines has led to an increase in the demand of standardization of Polyherbal Formulations. Commercialization of the manufacture of these medicines to meet this increasing demand has resulted in a decline in their quality, primarily due to a lack of adequate regulations pertaining to this sector of medicine; with the help of standardization it will be possible to obtain uniform and high quality raw materials which are fundamental to the efficacy and safety of herbal drugs. Pancasama churna is a Polyherbal Formulation is to be effective mainly in various types of digestive disorders, has been standardized by following modern scientific quality control procedures both for the raw material and the finished product. It was subjected to macro-microscopic, Physico-chemical, preliminary phytochemical, TLC and HPTLC to fix the quality standards for the phytoconstituents present in formulation. The various evaluation parameters performed on Pancasama churna formulation are Total Ash Value, Water Soluble Extractive Value, Alcohol Soluble Extractive Value, Micromeritics Properties (such as Angle of Repose, Bulk Density, Tapped Density, Porosity, True Density) and phytochemical screening. This study was results a set of diagnostic characters essential for its standardisation. TLC and HPTLC fingerprinting were employed to fix standards.

KEY WORDS: Standardization, Polyherbal Formulation, Physico-chemical parameters, TLC and HPTLC
DEVELOPMENT AND VALIDATION OF HPTLC METHOD TO DETECT GALLIC ACID IN POLYHERBAL FORMULATION

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ABSTRACT

Gallic acid is one of the phytoconstituents present in *Terminalia chebula*. These plants are used traditionally in the treatment of digestive disorder and also in the treatment of ulcers and wounds. In the present study, an attempt has been made to develop a HPTLC method for quantitative estimation of gallic acid in different ayurvedic polyherbal formulations. The method employed TLC aluminium plates precoated with silica gel 60 F254 as the stationary phase. The solvent system consisted of Toluene: Ethyl acetate: Formic acid (4ml: 6ml: 1ml). This system was found to give compact spots for gallic acid (Rf value of 0.26±0.03). Densitometric analysis of gallic acid was carried out in the absorbance mode at 254 nm. This HPTLC method was found to be reproducible, accurate, and can detect gallic acid at a nanogram level. The developed HPTLC method would be an important tool in the quality control method for polyherbal formulations.

KEYWORDS: Gallic acid, *Terminalia chebula*, HPTLC, polyherbal formulation, standardization, validation.
EFFECTS OF HYDROALCOHOLIC EXTRACT OF AZADIRACHTA-INDICA A. JUSS. 
(MELIACEAE) LEAVES POWDER ON THE STREPTOZOTOCIN INDUCED DIABETE IN 
ALBINO RATS

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ABSTRACT

Hydroalcoholic extract of leaves of Azadirachta-indica was prepared. Adult healthy albino rats were divided into four groups and received a dose of 55mg/kg body weight of streptozotocin. Animals of group I served as diabetic control group. The animals of II, III, and IV groups received 250 mg, 500 mg and 750 mg doses of the extract respectively for different durations. 750 mg dose showed increase in body weight. All doses of hydroalcoholic extract of Azadirachta-indica were able to decrease the blood sugar level significantly. Extract feeding showed definite improvement in the pancreatic islets. No toxic effect was observed in the liver. The significant features of the study have been blood glucose once lowered by the treatment with Azadirachta-indica leaves extract remained even after discontinuation of drug for 15 days.
STANDARDIZATION OF HERBAL DRUGS: NEED AND NEW APPROACHES

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ABSTRACT

Herbal formulations have reached extensive acceptability as therapeutic agents for several diseases. Most of world population is dependent on herbal drugs. The quality of herbal drugs is the sum of all factors which contribute directly or indirectly to the safety, effectiveness and acceptability of the product. Standardization of drugs means confirmation of its identity and determination of its quality and purity. The development of authentic analytical methods which can reliably profile the phytochemical composition, including quantitative analyses of marker/bioactive compounds and other major constituents, is a major challenge to scientists. Initially the crude drugs were identified by comparison only with the standard description available. At present due to advancement in the chemical knowledge of crude drugs various methods like botanical, chemical, spectroscopic and biological methods are used for estimating active constituents present in the crude drugs in addition to its physical constants.

The extraction of high-valued herbal compounds using microwave-assisted extraction and supercritical phase extraction technology followed by the standardization utilizing various spectroscopic, chromatographic and thermogravimetric techniques individually and/or in combination has been discussed in relation to herbal drugs. Capillary electrophoresis and polarographic techniques contributions towards standardization of herbal drugs is also reported. For ayurveda and other traditional medicines newer guidelines of standardization, manufacture and quality control are required. Powerful new technologies such as automated separation techniques, high-throughput screening and combinatorial chemistry are revolutionizing drug discovery.
Although the technical term “Pharmacovigilance” does not feature in Herbal medicines texts, the spirit of pharmacovigilance is vibrant and is emphasized repeatedly in all major texts. The use of herbal medicines is popular in India - and in recent times has become accepted in other countries. The total herbal market is of $ 62 billion & WHO anticipates that the global market for herbal products to grow upto $ 5 trillion by 2050. The worldwide consumption of herbal medicines today is enormous, so that, in terms of population exposure alone, it is essential to identify the risks associated with their use. Safety of herbal medicines is therefore an important public health issue. India, one of the developing countries, despite its bio-diversity and huge prospects of benefits, lacks efficient pharmacovigilance for herbal products. Despite several initiatives by The World Health organization (WHO) to strengthen national regulation, registration, quality assurance and control of herbal medicines, the collective efforts to achieve these goals are progressing at snail’s pace. The WHO database has over 60,000 suspected herbal case reports. Due to the lack of clinical trials for most herb al medicinal products, post marketing pharmacovigilance becomes a critical source of safety information. However, the assessment of adverse reactions associated with herbal medicinal products offers unique challenges in the quantity and quality of available information. Establishment of such internationally acceptable pharmacovigilance mechanisms will thus contribute significantly to scientifically attest the parity between the herbal drugs and modern medicines. In a nutshell, we know many hazards have already been reported in India on account of not practicing pharmacovigilance in herbal pharma products and hence exercising the same is the need of the hour. Effectual regulations in this area would do a world of good and help avert a 'herbal disaster'.
ABSTRACT

Atherosclerosis which results from gradual deposition of lipids in arteries is a leading cause of mortality worldwide. Diet is one of the most important factors underlying atherosclerosis. High-cholesterol diet enhances atherosclerosis and vegetarian diets are known to slow down the process. *Cucurbita pepo* Linn (pumpkin) is an herb of the Cucurbitaceae family. This study determines the effects of *Cucurbita pepo* L. seed on lipoproteins and atherosclerosis in hyperlipidemic rats. To evaluate the antihyperlipidemic activity of *Cucurbita pepo* L. seed extract in cafeteria diet induced hyperlipidemia in experimental animals (rats). Cafeteria diet was administered for 40 successive days to male Wistar rats. In separate groups of animals, the Petroleum ether extract (PEE) (250 and 300 mg/kg p.o.) of *Cucurbita pepo* seeds extract was administered along with cafeteria diet for 40 successive days to Wistar male rats. Cafeteria diet alone significantly increased body weight, serum total cholesterol, triglycerides and decreased HDL-C in male rats as compared to control. PEE showed a significant decrease in body weight, serum cholesterol, and triglycerides and a significant increase in HDL-cholesterol in cafeteria diet-induced obesity models in rats as compared to their respective control groups. Thus, the PEE of *Cucurbita pepo* seeds showed a significant weight-reducing and hypolipidemic activity in cafeteria diet-induced hyperlipidemic rats. Therefore, *Cucurbita pepo* is one of the useful herbal medicine for prevention of atherosclerosis and more studies in this regard is recommended.

**KEYWORDS:** Cafeteria diet, hyperlipidemia, *Cucurbita pepo* Linn.
HERBAL DRUG INTERACTION
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ABSTRACT
Globally, herbal remedies are increasingly popular. In the United States, herbal medicine use during the past year increased from 2.5% of the population in 1990 to 12.1% in 1997. Herbal preparations are often promoted as natural products and therefore safe, but this is an inaccurate and even dangerous assumption. Therefore, unrecognized use of herbal products may cause severe complications in patients. There are thousands of herbal preparations on the market worldwide, including Ayurvedic, Chinese and other Asian herbs, without any control over the “quality” of the product. Herbal products often contain several active ingredients, which are not always listed on the product label. Adverse effects associated with some herbal preparations include: Ginseng: hypoglycemia (low blood sugar level); reduction of anticoagulation properties of warfarin; increased risk of hemorrhage due to inhibition of platelet aggregation. Echinacea: allergic reactions, immunosuppression (increased risk for postoperative infections), reduced efficacy of immunosuppressant medication such as prednisone or cyclosporine. Our knowledge of the pharmacodynamic and pharmacokinetic properties of many of the herbal medications is incomplete, and there are no studies providing specific and clear information on adverse anaesthetic interactions. These issues need to be addressed in future studies.
A BRIEF OVERVIEW OF MECHANISMS OF ALLOXAN AND STREPTOZOTOCIN, THE COMMONLY USED AGENTS FOR INDUCTION OF DIABETES MELLITUS IN ANIMAL MODELS.

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ABSTRACT

Alloxan and Streptozotocin are widely used to induce experimental diabetes in animals. The mechanism of their action in B cells of the pancreas has been intensively investigated. The present review is an update about the exact mechanism of action of both the inducing agents. The cytotoxic action of both these diabetogenic agents is mediated by reactive oxygen species, however, the source of their generation is different. Alloxan and the product of its reduction, dialuric acid, establish a redox cycle with the formation of superoxide radicals. These radicals undergo dismutation to hydrogen peroxide. Thereafter highly reactive hydroxyl radicals are formed. The action of reactive oxygen species with a simultaneous massive increase in cytosolic calcium concentration causes rapid destruction of B cells. Streptozotocin enters the B cell via a glucose transporter (GLUT2) and causes alkylation of DNA. DNA damage induces activation of poly ADP-ribosylation, a process that is more important for the diabetogenicity of Streptozotocin than DNA damage itself. Poly ADP-ribosylation leads to depletion of cellular NAD+ and ATP. Enhanced ATP dephosphorylation after streptozotocin treatment supplies a substrate for xanthine oxidase resulting in the formation of superoxide radicals. Consequently, hydrogen peroxide and hydroxyl radicals are also generated. Furthermore, streptozotocin liberates toxic amounts of nitric oxide that inhibits aconitase activity and participates in DNA damage. As a result of the streptozotocin action, B cells undergo the destruction by necrosis.
EVALUATION OF ANTI-TUSSIVE ACTIVITY OF *NIGELLA SATIVA* AND *LINUM USITATISSIMUM* IN EXPERIMENTALLY INDUCED COUGH IN MICE

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ABSTRACT

Cough is a natural reflex expulsion defense mechanism of the body, for clearing excess secretions, mucous, inhaled irritants, toxins or foreign substance in the respiratory tract. It is the most common symptom of respiratory disease. When cough becomes serious, opioids are effective, but they have side effects like sedation, constipation, some addiction liability and also compromise the respiratory function. Therefore, there is a need to have effective anti-tussive agent which do not have respiratory suppressant activity. The present study was carried out to evaluate anti-tussive activity of seeds of two indigenous medicinal plants i.e *Nigella sativa* and *Linum usitatissimum* in sulfur dioxide gas induced cough model in mice. Both the plants showed significant reduction in cough like movements in the experimental mice when compared with Dexromethorphan, used as standard.
EVALUATION OF ANTINOCICEPTIVE AND ANTI-INFLAMMATORY ACTIVITY OF PAVONIA ODORATA

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ABSTRACT

The effect of Pavonia odorata Willd (Family: Malvaceae) aqueous and alcoholic root extracts (300mg/kg) were studied for antinociceptive and anti-inflammatory activity in experimental animals. Both the extracts revealed significant effects (p<0.01) against thermal, chemical and forced induced stimuli in hot plate, acetic acid induced writhing and tail clip method respectively as well as significant anti-inflammatory effects in carragenan induced rat paw edema. The antinociceptive effect in hot-plate method peaked at 120min, and in tail clip method 45 min after drug administration and 30 min following acetic acid injection in acetic acid induced writhing. In Carragenan induced rat paw edema the % inhibition was 50.13%, 51.72%, for aqueous and alcoholic extracts respectively.
IN VITRO SHOOT MULTIPLICATION AND PLANTLET REGENERATION FROM NODAL EXPLANTS OF CARDIOSPERMUM HALICACABUM L
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ABSTRACT
Cardiospermum halicacabum L, known as the Balloon plant or Love in a puff, which is a climbing plant widely distributed in tropical and subtropical Africa and Asia. In the global market, balloon vine has been utilized as several products; various forms of products like gel, cream, shampoo, spray etc. of C. halicacabum are available in the market. These products are useful for dry itchy skin and scalp. These products are supported by the various claims concerning with medicinal properties of balloon vine. Cardiospermum is an active ingredient in creams and lotions for dermatitis, eczema, and soriasis. Since it is not a steroid, it is often used as an alternative to cortisone creams. A simple and efficient protocol for in vitro cloning of mature plants of Cardiospermum halicacabum using nodal shoot segments has been successfully developed. The stem of Cardiospermum halicacabum L being soft and delicate is very sensitive to physical handling and surface sterilization. In case of Cardiospermum halicacabum extra care must be taken while selecting the explant and surface sterilizing it. Three to four shoots were initiated per axillary meristems on Murashige and Skoog (MS) medium supplemented with 2.0 mg/l-1 BAP and 0.5 mg/l-1 IAA within two weeks, while less numbers of shoots produced on MS medium augmented with Kinetin (Kn). Repeated transfer of the initial explants for up to five passages on MS medium with 0.5 mg/l-1 BAP and Kn + 0.5 mg/l-1 IAA yielded maximum numbers of shoots. Healthy and elongated shoots were rooted on 1/2 MS medium + 2.0 mg/l-1 Indole-3 butyric acid (IBA). The plantlets thus obtained were successfully hardened in green house and transferred to the field.

KEYWORD: In Vitro, Plantlet, Nodal Shoot Segments, Cardiospermum Halicacabum
TLC AND HPTLC FINGER PRINT PROFILE OF ETHYL ACETATE FRACTION OF ECLIPTA alba (L.)

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ABSTRACT

The present investigation was designed to develop the TLC and HPTLC finger print profile of ethyl acetate fraction of aerial parts of Eclipta alba (L.). The plant is commonly used in Ayurveda for liver disease and treatment of skin disorders, including eczema, dermatitis, hair loss and insect bites. The TLC and HPTLC fingerprint analyses were carried out by using Toluene: Ethyl Acetate (9:1) as a mobile phase. The TLC and HPTLC fingerprinting of the fraction showed several peaks with different Rf values. The TLC and HPTLC fingerprint profile is used in identification of the species from the adulterant and act as biochemical markers for this medicinally important plant.

KEYWORDS: TLC, HPTLC, Eclipta alba
DEVELOPMENT & EVALUATION OF OINTMENTS WITH ANTISEPTIC PROPERTY BASED ON WELL KNOWN TRADITIONAL OILS

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ABSTRACT

In present study the antiseptic ointment was prepared by the ointment bases with traditional antiseptic oil (Jatyadi oil, vishgarbh oil & doorvadi oil), the well known ayurvedic antiseptic & wound healing oils in market. These ointments contain higher percentage of ayurvedic antiseptic oil for cleansing efficacy. Further the extract can be fractionated using chromatographic techniques to isolate active constituents. The extract of plants can be formulated as ointment and screened for antiseptic activity on animals. A combinational therapy is the need of hour to treat sepsis, rashes, burns and wounds. This can be achieved by jatyadi oil, doorvadi oil, and vishgarbh oil (an antiseptic). In this study, ointment was formulated with different bases containing beeswax, spermaceti wax, ozokerite wax, lanolin, borax and BHT etc. By combining these oils with appropriate ointment bases a better therapy and patient compliance can be attained. The therapeutic effectiveness of the developed delivery system is evaluated by the in-vitro experiments. The in vitro studies are of great influence to establish the therapeutic performance of a designed dosage form. In the preliminary in vitro studies the clinical effectiveness of a drug may be asserted by measuring the intact drug by assessing the pharmacological or response in the laboratory animal. Hence it is justified that on the basis of In-vitro studies herbal ointment prepared from various antiseptic traditional oil gives better result for antiseptic activity then other herbal traditional oils.

KEYWORDS: Antiseptic, Cleansing efficacy, Ointment, Traditional oil
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PHARMACEUTICAL CHEMISTRY

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ABSTRACT

Two-dimensional nuclear magnetic resonance spectroscopy (2D NMR) is a set of nuclear magnetic resonance spectroscopy (NMR) methods which give data plotted in a space defined by two frequency axes rather than one. Types of 2D NMR include correlation spectroscopy (COSY), J-spectroscopy, exchange spectroscopy (EXSY), and Nuclear Overhauser effect spectroscopy (NOESY). Two-dimensional NMR spectra provide more information about a molecule than one-dimensional NMR spectra and are especially useful in determining the structure of a molecule, particularly for molecules that are too complicated to work with using one-dimensional NMR.

In a 2D-NMR experiment, the acquisition stage is separated from the excitation stage by intermediate stages called evolution and mixing. The process of evolution continues for a period of time labeled $t_1$. Data acquisition includes a large number of spectra that are acquired as follows: the first time the value of $t_1$ is set close to zero and the first spectrum is acquired. The second time, $t_1$ is increased by $\Delta t$ and another spectrum is acquired. This process (of incrementing $t_1$ and acquiring spectra) is repeated until there is enough data for analysis using a 2D Fourier transform. The spectrum is usually represented as a topographic map where one of the axes is $f_1$ that is the spectrum in the $t_1$ dimension and the second axis is that which is acquired after the evolution and mixing stages (similar to 1D acquisition). The intensity of the signal is shown by a stronger color the more it is intense.

- NMR are used to determine protein structures.
- Structural identification in organic and biological chemistry.
- Since its creation, 2D NMR has been useful for elucidating the structure of small molecules.
- Advanced computing power now allows the structure of large, biological molecules to be solved.
QUANTITATIVE TITRIMETRIC ANALYSIS OF NAPROXEN TABLET FORMULATION USING MIXED SOLVENCY CONCEPT

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ABSTRACT

The present paper describes the titrimetric analysis of naproxen tablet formulation by application of mixed solvency concept. Naproxen is very poorly water soluble drug and was solubilize using a blend (MSC). The British Pharmacopeia methods use organic solvents for their solubilization to carry out titration. Various organic solvents like acetone, chloroform, methanol, dimethylformamide have been utilized to solubilize poorly water soluble drugs for titrimetric analysis which have drawbacks like toxicity, high cost, and environmental hazards. The solubility of naproxen enhanced to more than 75 fold as compared to the solubility in distilled water. The percentage drug content in two types of marketed tablet was found close to 100 (100.54 ± 0.821 and 98.89 ± 1.115) indicating accuracy of proposed method. Percentage recoveries estimated by the proposed method ranged from 98.25 ± 1.721 to 100.11 ± 1.249, which are very close to 100. Recovery studies and low value of standard deviation, percentage coefficient of variation, and standard error validate the proposed methods. The primary objective of this study was to preclude the use of organic solvent and to employ mixed solvency concept for the analysis. The proposed method is novel, simple, accurate, precise, eco-friendly.

KEY WORD: MSC (5% sodium benzoate, 5% PEG 300, 5% PEG 6000, 5% Propylene Glycol, 5% Niacinamide), naproxen, mixed solvency, titrimetric analysis.
QUANTITATIVE TITRIMETRIC ANALYSIS OF BULK DRUG SAMPLE OF NAPROXEN USING MIXED SOLVENCY CONCEPT

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ABSTRACT

The present paper describes the titrimetric analysis of bulk sample of naproxen by application of mixed solvency concept. Naproxen is very poorly water soluble drug and was solubilize using a blend (MSC1). The British Pharmacopoeia methods use organic solvents for their solubilization to carry out titration. Various organic solvents like acetone, chloroform, methanol, dimethylformamide have been utilized to solubilize poorly water soluble drugs for titrimetric analysis which have drawbacks like toxicity, high cost, and environmental hazards.

The solubility of naproxen enhanced to more than 75 fold as compared to distilled water. The % drug content of naproxen by British pharmacopoeia and proposed method was found to be 97.81% and 99.06% respectively. The standard deviation, % RSD and standard error for the proposed method of naproxen using blend solution were found to be 1.626, 1.641 and 0.939 respectively.

The primary objective of this study was to preclude the use of organic solvent and to employ mixed solvency concept for the accurate analysis. The proposed method is novel, simple, accurate, precise, eco-friendly and use economical analytes so it can be used for naproxen for routine analysis purpose.

KEY WORD: MSC1 (5% sodium benzoate, 5% PEG 300, 5% PEG 6000, 5% Propylene Glycol, 5% Niacinamide), naproxen, mixed solvency, titrimetric analysis.
ADVANTAGES ULTRA-PERFORMANCE LIQUID CHROMATOGRAPHY (UPLC) OVER THE HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC)

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ABSTRACT

In recent years, significant technology advances have been made in analytical chemistry, performance system, optimization of drugs, detector design, and data processing and control. When brought together, the individual achievement in each discipline have created a step function improvement in chromatographic performance. UPLC is a new category of analytical separation sciences that retains the practically and principles of HPLC. Ultra performance liquid chromatography is technique which improves in three areas: chromatographic resolution, speed and sensitivity analysis. It uses fine particles and saves time and reduces solvent consumption. UPLC is comes from HPLC. HPLC has been the evolution of the packing materials used to effect the separation. An underlying principle of HPLC dictates that as column packing particle size decreases, efficiency and thus resolution also increases. By using smaller particles, speed and peak capacity (number of peaks resolved per unit time) can be extended to new limits which is known as Ultra Performance. In the present work, advantages of UPLC over HPLC are explained. Today’s pharmaceutical industries are looking for new ways to cut cost and shorten time for development of drugs while at the same time improving the quality of their products and analytical laboratories. Speed allows a greater number of analyses to be performed in a shorter amount of time thereby increasing sample throughput and lab productivity. These are the benefits of faster analysis and hence the ultra performance liquid chromatography. Analysis of operation cost and sample throughput found UPLC cost advantageous over HPLC.
ROLE OF TANDEM MASS SPECTROSCOPY IN IMPURITY PROFILING
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ABSTRACT
Impurity Profiling is the process of acquiring and evaluating data that establishes biological safety of an individual impurity. Thus, revealing its need and scope in pharmaceutical research. There is no clear definition of impurity in pharmaceutical world. Impurity profiling includes identification, structure elucidation and quantitative determination of impurity and degradation product in bulk drug material and pharmaceutical formulations. Impurity profiling gained importance in modern pharmaceutical analysis due to the fact that unidentified, potentially toxic impurities are hazardous to health and in order to increase for the safety of drug therapy, impurities should be identified and determined by selective method terms like residual solvents, organic solvents, by products, transformation products, etc. Identification of impurities is done by variety of chromatographic and spectroscopic technique either alone or in combination. Method based on liquid chromatographic separation with mass spectroscopic detection have revealed new organometallic compound in environmental and biological matrices, contributing to understanding of biological effects and environmental fate of organometallics. The present review covers various aspect related to the LC-MS-MS techniques used for the impurity profiling, which help in identification and estimating the various impurity. It is the new approach for the estimation of impurities in the drug product. Recent applications of LC-MS and LC-MS-MS are for the determination of organometallic compounds in environmental matrices and detection of various isomeric forms of drugs.

KEY WORDS: Chromatography, spectroscopy, LC-MS-MS, structure elucidation.
ABSTRACT

Adamantane derivatives receive a considerable attention because of their diverse biological activities. Reported study describes that adamantane containing moiety shows anti viral, antiparkinson’s, antibacterial and anticancer, anti malarial, anti diabetic, antinflammatory, neuroactive, anti infective, anti tuberculosis and treating neurological conditions. The most known drug of adamantane is amantadine, which is used for the prophylaxis and treatment of Type A influenza virus. N-adamantyl phthalimide showed a potent tumor necrosis factor α (TNF-α) production enhancing activity. Adamantyl substituted retinoid related molecules are the unique class of compounds which have been found to induce apoptosis in large number of tumor types. The hydrophobic cage like structure of adamantane which is also called as a “lipophilic bullet” has been use to enhance the lipophillicity of many biological compounds. This tetravalent cage is mechanically rigid and conformationally well defined. These features of adamantyl core attracted for the studies on multivalent ligand receptor interaction.

KEY WORDS: Adamantane, Lipophillicity
ABSTRACT

The worldwide epidemic of type 2 diabetes (NIDDM) has been stimulating the search for new concepts and targets for the treatment of this incurable disease. Over the past few years there has been much interest within the pharmaceutical industry in identifying compounds that inhibit GSK-3β as possible insulin mimetic sensitizing drugs. This interest has been heightened by the report that the level and activity of GSK-3β is moderately elevated in diabetic and obese strains of mice. The wide chemical diversity of possible inhibitors and the existence of multiple sites for potential inhibition constitute strong encouragement to pursue the development and evaluation of GSK-3β inhibitors as potential drugs. On the basis of literature study hydantoin analogs were designed. Phenylmethylen hydantoin (PMH) forms strong interactions with the hinge region of GSK-3β; carbonyl oxygen at position 2 form a H-bonding with backbone nitrogen of Val135 and the NH at position 3 to the carbonyl oxygen of Asp200. The part of the design compounds were synthesized by Knoevenagel condensation reaction. Phenylmethylen hydantoin analogs were screened for their anti-diabetic activity by Streptozotocin induced tail tipping method & their GSK-3β inhibitory activity was determined by comparison of in-vivo increase in liver glycogen content by synthesized compounds.
DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR ANALYSIS OF KETOPROFEN IN HUMAN PLASMA
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ABSTRACT
A simple, isocratic, stability-indicating reversed-phase high-performance liquid chromatographic (RP-HPLC) method has been developed for determination of ketoprofen in human plasma. The method employs precipitation for isolation and sample concentration, followed by reversed-phase liquid chromatographic analysis with ultraviolet UV detection at 260 nm. Analytes were extracted from serum with methanol. Ketoprofen was chromatographed on a C18 column with 75:25 (methanol: acidic water (acidify by 5% formic acid)) as mobile phase at a flow rate of 1 mL/min. The retention times of ketoprofen were 3.1 min. The calibration plot was linear for concentrations in the range of 200 to 1000 ng/mL. The extraction recovery of ketoprofen was 56%.
DESIGN, SYNTHESIS AND EVALUATION OF METHOXYLATED CHALCONES AS ANTIOXIDANT AGENTS

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ABSTRACT

Chalcones (1, 3 - diaryl-2-propene-1-ones) known for their antioxidant activity are precursors of open chain flavonoids and isoflavonoids. Chalcones inhibit tyrosinase enzyme which is involved in melanin synthesis. Based on docking studies, a series of methoxylated chalcones have been synthesized and tested for their antioxidant activity. The docking study of this series of compounds was performed on crystal structure of Tyrosinase (PDB ID: 3NM8) obtained from Bacillus megaterium using Molegro Virtual Docker Ver 5.0. The structures of newly synthesized compounds are in agreement with their IR, 1H NMR, and MS. Antioxidant activity data obtained from the four methods, i.e., DPPH free radical scavenging assay, iron chelating assay, reducing power assay and hydrogen peroxide scavenging assay indicates that the activity increased with the incorporation of electron donating groups exhibited by PD1 and PD2. Also the presence of dihydroxy on 2'/4' position of ring B showed best antioxidant activity as shown by PD9. The poor activities of PD10 and PD11 can be attributed to the presence of strong electron withdrawing groups i.e., Chloro and fluoro.
ABSTRACT

Malaria continues to be one of the major public health problems in many tropical countries causing extensive morbidity and loss of life. Chloroquine (CQ) has been the mainstream drug in the fight against Plasmodium falciparum since the 1950s, but its efficacy is eroded by the emergence of resistant parasites. Development of drug resistance to CQ and other currently used antimalarials is spreading rapidly, there is a great need for new drugs. Thus, there is a compelling and urgent necessity for new antimalarials, with mechanisms of action different from the existing ones, and to identify new drug targets. The quinoxaline derivatives seem to have very interesting biological properties. The quinoxaline were identified as a lead-compound with promising anti-falciparum activity. In attempts to establish the structural requirements necessary for inhibition of P. falciparum, QSAR study was performed on a series of 3-phenylquinoxaline 1,4-di-N-oxide derivatives employing classical hansch approach. The electronic properties of the various substituents have been found to play major roles in the binding of these compounds with the receptor.
METHOD DEVELOPMENT & COMPARATIVE STATISTICAL EVALUATION OF HPLC & HPTLC METHOD FOR SIMULTANEOUS ESTIMATION OF PARACETAMOL AND MELOXICAM

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ABSTRACT
Rapid, precise, accurate, specific, and sensitive high performance liquid chromatographic method and high performance thin layer chromatographic methods have been developed for simultaneous determination of paracetamol and meloxicam in their tablet formulation. The HPLC method was standardised using Phenomenex Luna reversed-phase C18 analytical column (25cm X 4.6mm, 5μm) with mobile phase constituted of Acetonitrile : Buffer, pH adjusted to 7 using orthophosphoric acid delivered at the flow rate of 1.0 ml min⁻¹ and detection was performed at 300nm. For HPTLC analysis separation was carried out on precoated TLC plates, coated with silica gel 60F-254 and using mobile phase dichloromethane: isopropanol:glacial acetic acid (10.5:1.5:0.1 v/v/v). Scanned at 300nm with CAMAG TLC scanner controlled by Cats Software. Different analytical performance parameters such as linearity, accuracy, precision, repeatability, robustness LOD and LOQ were determined according to International conference of Harmonization ICH Q2B guidelines. As a result HPLC method was found to be more precise and robust whereas HPTLC method was found to be more sensitive. As number of sample per analysis, different samples per shift, mobile phase cost, system cleanup cost, method development and speed of analysis is far much less in HPTLC as compared to HPLC.
NOVEL APPROACH FOR ESTIMATION OF GATIFLOXACIN IN TABLETS BY SPECTROPHOTOMETRY USING METFORMIN HYDROCHLORIDE AS HYDROTROPIC AGENT

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ABSTRACT

The present study suggest the use of spectrophotometric estimation of poorly water soluble drug gatifloxacin in tablets using aqueous solution of 1.5 M Metformin HCl in place of costly chromatographic method as per mention by Indian Pharmacopoea. Various organic solvents like methanol, chloroform, carbon tetrachloride etc. have been employed for solubilisation of poorly water soluble drugs for spectrophotometric estimations. Drawback of organic solvent include high cost, toxicity and error (due to volatility of solvent). Attempting to minimize these drawbacks, a new simple, ecofriendly, and economic, rapid and accurate method has been developed for quick and complete solubilisation of gatifloxacin. There was more than 18 fold enhancement in the aqueous solubility of drug in the hydrotropic solution, as compared to distilled water. Gatifloxacin shows maximum absorbance at 288 nm at which Metformin HCl and other tablet excipients do not show any any interference. The percent label claim estimated were found very close to 100 (101.12 ± 1.101 and 99.61 ± 0.823) indicating accuracy of the proposed method. Low values of standard deviations, % coefficient of variation and standard error validated the method. Percent recoveries estimated by the proposed methods are close to 100 (99.04 ± 1.928 to 100.68 ± 1.144).
ECO FRIENDLY QUANTITATIVE SPECTROPHOTOMETRIC ESTIMATION OF TINIDAZOLE IN TABLETS USING N,N DIMETHYL UREA AS HYDROTROPIC AGENT.


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ABSTRACT

An eco-friendly, economic, accurate, sensitive and reproducible method was developed for quantitative spectrophotometric analysis of tinidazole in tablet dosage form. Indian Pharmacopoeia suggested use of class 2 organic solvent methanol for analysis of tinidazole, drawbacks of which include high cost of analysis, toxicity and error due to volatility of solvent. In present investigation, 7.5M aqueous solution of N,N dimethyl urea (HS1) was used for solubilisation of sparingly water soluble antiprotozoal drug tinidazole. The solubility of tinidazole in HS1 increased to more than 3 fold as compared to its water solubility. Calibration curve of tinidazole was plotted by recording absorbances of standard solution at 318nm against respective reagent blank. Lambert’s beer law was obeyed in concentration range 5-25 µg/ml. No interference of solubilizer and tablet excipient were seen above 260 nm. The percentage drug content in two types of marketed tablet was found close to 100 (100.43 ±0.861 and 101.54 ±1.006) indicating accuracy of proposed method. Results were validated statically and recovery studies confirmed accuracy and precision of proposed method. Low value of standard deviation, percentage coefficient of variation, and standard error further validate the proposed methods.
A NOVEL APPROACH FOR ESTIMATION OF NORFLOXACIN TABLET USING MIXED HYDROTROPIC SOLUBILIZATION TECHNIQUE

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ABSTRACT

The use of various organic solvents in the spectrophotometric analysis of poorly aqueous soluble drug like norfloxacin is very expensive and toxic. Thus by the application of various solubilization technique we can enhance the solubility of these drug in the aqueous solvent which can reduce the cost of analysis and also the toxicity of solvents. Hydrotropy is a solubilization method in which various salts are used to increase the solubility of drug. The objective of this research was to employ the mixture of hydrotropic solution (blend) of 5 M Urea, 1 M Sodium acetate, 1 M Sodium citrate to enhance the solubility of norfloxacin in aqueous solution and prepared aliquots for U.V spectroscopic analysis and we have found the solubility enhancement is more than 9 folds by the use of the mixture of hydrotropic agents, these agents does not interfere with norfloxacin ($\lambda_{max}^{324nm}$) Recovery studies and statistical data proved the accuracy, reproducibility and the precision of the proposed method.

KEYWORDS: Hydrotrophy, Norfloxacin, Sodium citrate, Sodium acetate, Spectrophotometry
NANOPARTICLES CONSISTING PROTEINS CAN BE A PROMISING DRUG DELIVERY SYSTEMS

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ABSTRACT
Nanoparticle technology utilizing the human protein albumin exploits natural pathways to selectively deliver larger amounts of drug to tumors. Nanoparticles have advantages, such as small size, high surface area, and modification using functional groups for high capacity or selectivity. The nanoparticle technology used in recent years has great promise in promoting the efficacy of drugs. Nanoparticles with Proteins are especially worthy of notice because they can be used for site specific targeting. Particulate systems like Nanoparticles have been used as a physical approach to alter and improve the pharmacokinetic and pharmacodynamic properties of various types of drug molecules. They have been used in vivo to protect the drug entity in the systemic circulation, restrict access of the drug to the chosen sites and to deliver the drug at a controlled and sustained rate to the site of action. Nowadays active research is focused on the preparation of nanoparticles using proteins like albumin, gelatin, gliadin and legumin. Protein nanoparticles hold promise as drug delivery systems for Parenteral as well as oral. This article reviews the introduction of protein nanoparticles with preparation, characterization and applications of Protein Nanoparticles.

KEYWORDS- Protein Nanoparticles, Albumin, small size, Site specific targeting
FORMULATION AND CHARACTERIZATION OF BIO-ADHESIVE FILM FORMING GEL OF CLOTRIMAZOLE

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ABSTRACT

The present study was done to formulate bioadhesive film forming gel for transdermal delivery of clotrimazole. It possessed better skin permeation potential. It leads to the improvement in bioavailability of drug, reduction of dose and dosing frequency. The optimized bio-adhesive gel formulation was characterized for visual appearance, grittiness, pH, viscosity, measurement, drug content, drug release property etc. The novel film-forming gel was colourless, transparent, jelly-like substance with good flexibility and adhesive property, which was easy to be coated on the skin surface and in situ forms a very thin and comfortable film with an aesthetical appearance but without any greasy feeling. The film is easy to handle before application. Studies indicate that viscosity of the formulation markedly increased with the high amount of tetraethoxysilane. The release of clotrimazole from the gel varied according to concentration of polymer. Drug release is high in formulation F1. On increasing the concentration of polymer, diffusion rate of drug through skin decreases. The sustaining action of the formulation was found to be for about 8 hours. The film forming gel could thus be useful in the formulation of dosage form for the antifungal drug Cotrimazole.
B –CYCLODEXTRIN BASED NANOPOROUS COLLOIDAL CARRIER FOR DRUG DELIVERY- REVIEW

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ABSTRACT

Nanosponges are porous nanomeric drug delivery systems and are small spherical particles with large porous surface. Nanosponges also have colloidal sizes with a mean diameter of less than 1 μm and narrow size distribution and form opalescent suspensions on dispersion in water. These are solid, water-insoluble and crystalline in nature. Cyclodextrin (β-CD) based polymers are currently receiving a great interest for the unique capability to include relatively large guest molecules by the cooperation of two or more adjacent CD moieties in a highly crosslinked polymeric network, usually denoted as a CD nanospo. Nanosponges are able to incorporate both hydrophilic and hydrophobic drug molecules because of their inner hydrophobic cavities. Nanosponges can be prepared by reacting cyclodextrins (cyclic oligosaccharides) with suitable cross-linking reagents. These systems have many important applications, for instance as drug delivery systems, protein delivery, in enzyme immobilization and for delivery of gases.

KEYWORDS- β –Cyclodextrin, nanosponges, cross linking agent, drug delivery
FORMULATION AND EVALUATION OF NIOSOMES CONTAINING QUERCETIN

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ABSTRACT

Quercetin is a flavonoid molecule which possesses many beneficial effects on human health, including cardiovascular protection, anti-cancer activity, anti-ulcer effects, anti-allergy activity, cataract prevention, antiviral activity, and anti-inflammatory effects. Niosomes are colloidal particles, multilamellar vesicular structure of non-ionic surfactants, composed of non-ionic surfactant. It increases drug bioavailability, prevents drug degradation, reduces toxic effects and transports drugs to the target sites. This study was aimed at developing and optimizing niosomal formulation of quercetin in order to improve its bioavailability. Different formulation of quercetin Niosomes by varying Drug: Cholesterol: Non ionic surfactant was prepared by using Modified ether injection method. The formulation of varying concentration was evaluated on the basis of size and shape, Entrapment efficiency, in vitro/ in vivo drug release, stability study, membrane rigidity and No. of lamelle. The formulation was assigned as Q1 to Q8. Q1, Q2 and Q4 emerged as the most satisfactory formulation in so far as its properties were concerned. In vitro studies were performed for Q1, Q2 and Q4 niosomes based on its dissolution profile we observed that Q4 was comparatively better among all others. It shows that niosomal drug delivery system may be a promising carrier for the novel drug delivery system.
PRINCIPLES OF PROCESS VALIDATION AND QUALIFICATION
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ABSTRACT
Validation is defined as the establishing of documented evidence which provides a high degree of assurance that a planned process will consistently perform according to the intended specified outcomes. As per US FDA Guidelines “PROCESS VALIDATION” is establishing documented evidence which provides a high degree of assurance that a specific process consistently produce a product meeting it’s predetermined specifications and quality attributes”. Validation is classified as Prospective, Retrospective, Concurrent and re-validation. Validation of Equipment is known as Qualification. Qualification is further classified into Design, Installation, Operational, and Performance. Validation is documented in Protocols and Reports.

KEYWORDS: Validation, Qualification, Design, Installation, Operational, Performance.
ABSTRACT

Polymeric micelles (PMs) have emerged as versatile drug carriers during the past decades. One of the most widely studied subjects in Nano science technology is related to the creation of supramolecular architectures with well-defined structures and functionalities. These supramolecular structures are generated as a result of self-assemblage of amphiphilic block polymers. Self-assembly of block polymers via hydrophobic and hydrophilic effects, electrostatic interactions, hydrogen bonding, and metal complexation has shown tremendous potential for creating such supramolecular structures with a wide array of applications. Polymeric micelles have gathered considerable attention in the field of drug and gene delivery due to their excellent biocompatibility, low toxicity, enhanced blood circulation time, and ability to solubilize a large number of drugs in their micellar core. In this article we have reviewed several aspects of polymeric micelles concerning their general properties, preparation and characterization techniques, and their applications in the areas of drug and gene delivery. Polymeric micelles can be used as 'smart drug carriers' for targeting certain areas of the body by making them stimuli-sensitive or by attachment of a specific ligand molecule onto their surface.

KEYWORD: Micellization, Polymeric Micelles, Solubilization, Targeting, Stimuli-Sensitivity
A NEW CORRIDOR FOR DRUG DELIVERY: MULTI UNIT PELLET SYSTEM TABLETS
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ABSTRACT
Dosage form development involves design and development of a product with a defined target product quality profile, and a defined manufacturing process. The Multiple-Unit Pellet System (MUPS) tablets are a kind of multiparticulate system that has become an important and successful dosage form for immediate or modified drug release. These Multiple Units are composed of tablets containing uncoated or coated pellets allowing modified drug release. The functional coating like drug coating, barrier coating, enteric polymer coating is usually applied in a fluid bed coating processor provides each subunit with the characteristic desired drug release properties. The size, shape and surface morphology of the pellets to be coated are the prerequisites for coating of pellets. Design of MUPS involves formulating pellets by different techniques and further compression of these pellets into tablets.

KEYWORDS:- MUPS, Pellet, Fluid bed coating
ABSTRACT

The pelletization technologies are rapidly gaining interest in the pharmaceutical field and represent an efficient pathway for manufacture of new drug delivery system. Pelletization technique help in the formation of spherical beads or pellets having a diameter 0.5 - 1.5 mm which can be eventually coated for preparation of modified release dosage form. It leads to an improvement in flow ability, appearance and mixing properties thus avoiding for generation of excessive dust and reduces segregation and remove the undesirable properties and improve the physical and chemical properties of fine powder and it has good advantage over the conventional dosage form.

KEYWORDS: - Pelletization, Spherical beads
PULSINCAP DRUG DELIVERY SYSTEM
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ABSTRACT
In the recent past, controlled release concept and technology has received increasing attention because of growing awareness to drugs toxicity. Pulsincap technology is achieving a lot of interest as they 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. Pulsincap system is one of the methods of pulsatile drug delivery systems which are used to get the drug release after a pre determined lag time. These systems are designed based on 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. Pulsatile drug delivery is one such system (Pulsicap) that, by delivering drug at the right time, right place, and in right amounts, holds good promises of benefit to the patients.

KEYWORDS: Pulsincap, zero-order release, controlled release
CUBOSOMES: HONEYCOMB LIKE STRUCTURED AS TOPICAL DRUG DELIVERY
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ABSTRACT
Cubosomes consist of honeycombed (cavernous) structures separating two internal aqueous channels and a large interfacial area. Self-assembled cubosomes as active drug delivery systems are receiving more and more attention and interest after the first discovery and nomination. They exhibit different internal cubic structure and composition with different drug-loading modalities. Cubosome dispersions are thermodinamically stable, bioadhesive and biocompatible. With respect to liposome, cubosome possesses a larger ratio between the bilayer area and the particle volume and a larger breaking resistance. One of the most common surfactants used to make cubosomes is the monoglyceride glycerol monoolein. Cubosomes are nanosized structures formed by dispersion of bicontinuous cubic liquid crystalline phases. Improved properties of cubosomes compared with the parent phase include higher surface area and lower viscosity of the bulk solution (while maintaining the solid-like viscosity inside). These properties, combined with high capability in loading hydrophilic and hydrophobic molecules, heat stability and typically low cost of raw materials make these nanostructures attractive vehicles for food and pharmaceutical applications. Hydrating a surfactant or polar lipid that forms cubic phase and then dispersing the solid-like phase into smaller particles usually form Cubosomes. There is a lot of excitement about the cubic phases because its unique microstructure is biologically compatible and capable of controlled release of solubilized active ingredients like drugs and proteins. The aim of review article includes manufacturing techniques, system forming cubic phase, mechanism, applications of cubosomes.

KEYWORDS- Cubosome, Bicontinuous, Monoolein, Bioadhesive.
ABSTRACT

Sometimes an active pharmaceutical ingredient needs more than a simple formulation to become a successful drug. Liposomes and lipids offer elegant solutions to a number of challenges. A liposome derivative (Transferosome) is an artificially-prepared vesicle composed of a lipid bilayer with surfactant. Transferosome can be used as a vehicle for administration of nutrients and pharmaceutical drugs. Transferosome acquire an transportation consisting of hydrophobic and hydrophilic moieties. Elasticity of Transferosome membrane is achieved by amalgamation with suitable surfactant components in the apposite ratios. Transferosome can also be designed to deliver drugs in other ways. Further advances in Transferosome research have been able to allow Transferosome to avoid detection by the body’s immune system, specifically, the cells of reticuloendothelial system (RES).

KEY WORDS: Transferosome, vesicle, RES
A NOVEL LOOM UFASOME AS TRANSDERMAL DRUG DELIVERY
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ABSTRACT
Fatty acids have been widely used as adjuvant, vehicles in drug delivery viz penetration enhancers in topical delivery and in polymeric micelles to provide sustained release. Much of the knowledge of membrane lipid function has come from work with aqueous dispersions of liposomes, or microscopic phospholipid particles, in which the molecular arrangement is similar to the orientation found in biological structures. The arrangement of lipid molecules in biological membranes enables them to play both a structural part in providing a matrix for membrane proteins and a functional one, in which they act as a barrier to the free flow of solute. “Ufasome” is an abbreviation for unsaturated fatty acid liposomes, which are generated at specific pH. The long-term stability of Ufasome membranes is highly dependent on decrease in free energy of the fatty acid-water system. Critical factor for formation fatty acid vesicles i.e. Ufasonic formulation is pH which controls the degree of ionization of fatty acid. Fatty acid (oleic acid) assembled into vesicles if pH equals the pKa of the acid (8.5), because at this pH, ~ 50% of the carboxylic acid is ionized and transforms into ionized amphiphile(s) with a tendency to form vesicles aggregates. The acid is present as ionic RCOO− as well as neutral RCOOH species. The advantage of ufasones over liposomes is the ready availability and lower cost of fatty acid.

KEYWORDS: Ufasomes, Fatty acids, Vesicles
PREPARATION AND CHARACTERIZATION OF STEARIC ACID LOADED NANOSTRUCTURED LIPID CARRIERS
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ABSTRACT
Stearic acid loaded solid lipid nanoparticles (SLN) of repaglinide were prepared by modified solvent injection techniques with using poloxamer F-68 as surfactant. The particle size, zeta potential, encapsulation efficiency, morphological character by scanning electron microscopy and in-vitro release characteristics of drug loaded SLNs were characterized.
THE CURRENT SCENARIO OF PHARMACEUTICAL INDUSTRIES: ACQUISITIONS TAKE OVERS & MERGERS

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ABSTRACT

Over the past decade, Pharmaceutical companies have entered difficult phase. The core issues for drug companies is expiring patents of blog buster drugs, pricing issues, increasing regulatory and legal concerns, declining productivity of in house R&D. Between 2007 to 2012, the top 50 pharmaceutical companies are faced patent expiries of $115 billion worth of drugs. As a result, India is undergoing the largest number of acquisitions, take over & Merges in Pharmaceutical and healthcare sectors. The most of the M&A are taking place in India to improve the size so as to withstand with international competition which they have been exposed to in the Post-liberalization regime. This review article deals with various business models like merges, acquisition and takeover along with there respective motives, advantages and impacts on pharmaceutical market, R&D, shareholder's value and employees.

KEYWORDS: Pharmaceutical, Mergers, Acquisitions, Take overs.
SPECTROPHOTOMETRIC ANALYSIS OF CEFIXIME TABLETS USING SODIUM GLUTAMATE AS HYDROTROPIC SOLUBILIZING AGENT
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ABSTRACT
Highly concentrated aqueous solutions of various hydrotropic agents like sodium benzoate, sodium salicylate, sodium acetate, sodium citrate, nicotinamide and sodium ascorbate have been observed to enhance aqueous solubility of a large number of poorly water-soluble drugs. In the present investigation hydrotropic solubilization technique has been employed to solubilize poorly water-soluble cefixime (cephalosporin antibiotics) tablets using by 2M Sodium glutamate solution to carry out spectrophotometric analysis. There was more than 6 fold enhancement in aqueous solubility of cefixime in 2.0 M sodium glutamate solution. The hydrotropic agent did not interfere in the analysis and these are economic and pollution free. The proposed method is new, simple, accurate and reproducible. Statistical data proved the accuracy, reproducibility and precision of the proposed method.

KEYWORDS: Hydrotropy, Cefixime, sodium glutamate, Spectrophotometry.
MESOPOROUS NANOPARTICLES: A REVIEW ARTICLE
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ABSTRACT
Functional mesoporous nanoparticles have recently attracted substantial attention in view of their great potential for targeted drug delivery and controlled release. For such demanding applications, it is desirable that the mesoporous particles be equipped with internal functionality for controlled host-guest interactions, a release system for the switchable release of the guest based on external stimuli, as well as targeting ligands for the required type of cell. A novel strategy has been developed to obtain control over the spatial localization of molecular functionality in such nanoparticles. This is achieved via synthesis of multiple core-shell colloidal mesoporous silica (CMS) nanoparticles having different molecular functionalities in the inner surface and on the outer particle shell. We show that active enzymes can be stabilized in such mesoporous nanoparticles using concepts of click-chemistry. Mesoporous silica nanoparticles (MSNs), with their intrinsically large and easily functionalized surface areas and pore volumes, are particularly well-suited to efficient conveyance of a wide variety of therapeutic agents. When combined with other organic/inorganic nanomaterials, the resultant organic/inorganic-MSN hybrids demonstrate unique synergies and even greater versatility. It is well recognized that an efficient delivery system should have the capability to transport the desired guest molecules without any loss before reaching the targeted location. Upon reaching the destination, the system needs to be able to release the cargo in a controlled manner. Any premature release of guest molecules poses a challenging problem. For example, the delivery of many toxic antitumor drugs requires “zero release” before reaching the targeted cells or tissues.
ABSTRACT

In the series of these vesicular systems, colloidosomes is the advanced tool in drug delivery. Vesicular drug delivery reduces the cost of therapy by improved bioavailability of medication, especially in case of poorly soluble drugs. Colloidosomes are composed of an aqueous or hydrogel core that is coated by a semi-permeable colloidal shell. Colloidosomes are the hollow shell microcapsules consisting of coagulated or fused particles at interface of emulsion droplets. The particles self assemble on the surface of droplets in order to minimize the total interfacial energy forming colloidosomes. The properties of the shell can be varied to control the rate of release of encapsulated components such as drugs. Specifically, the pores formed between the colloidal particles suppress transport of large components, while allowing diffusion of smaller ones. Colloidosomes have a great encapsulation efficacy with a wide control over size, permeability, mechanical strength and compatibility. Efficient encapsulation of active ingredients such as drugs, proteins, vitamins, flavors, gas bubbles or even living cells is becoming increasing the important for a wide variety of applications and technologies, ranging from functional foods to drug delivery to bio medical applications. This system also solves the problem of insolubility, instability, rapid degradation and widely used in specialized areas like protein delivery, gene delivery, targeting to brain, tumour targeting, and oral vaccine formulations, problems associated with their stability and permeability are often encountered, thereby limiting their general application.
ORALLY DISINTEGRATING EXTENDED RELEASE (ODT-ER) DOSAGE FORMS
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ABSTRACT
Orally disintegrating systems have carved a niche amongst the oral drug delivery systems due to the highest component of compliance they enjoy in patients especially the geriatrics and pediatrics. In addition, patients suffering from dysphagia, motion sickness, repeated emesis and mental disorders prefer these medications because they cannot swallow large quantity of water. Further, drugs exhibiting satisfactory absorption from the oral mucosa or intended for immediate pharmacological action can be advantageously formulated in these dosage forms. However, the requirements of formulating these dosage forms with mechanical strength sufficient to withstand the rigors of handling and capable of disintegrating within a few seconds on contact with saliva are inextricable. Therefore, research in developing orally disintegrating systems has been aimed at investigating different excipients as well as techniques to meet these challenges. A variety of dosage forms like tablets, films, wafers, microparticles, nanoparticles etc. have been developed for enhancing the performance attributes in the orally disintegrating systems. Examples of some disintegrating agents are Erythritol, D-mannitol, Using OraSolv®, DuraSolv® and Lyoc™ technologies successful in the formulation of ODT with extended-release profiles. These ODT technologies meet the CDER definition of an ODT: “A solid dosage form containing medicinal substances, which disintegrates rapidly, usually within a matter of seconds, when placed upon the tongue”. ODTs are popular because they have many advantages to patients and physicians like Convenience, great taste, ease of administration, discreet, safety. The combination of ODT technology with ER technology for ODT-ER dosage forms, which provide additional clinical value to patients, including extended release, Better maintenance of therapeutic levels.

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Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives
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QUANTUM DOTS AND CARBON NANOTUBES- A NOVEL COMBINATION IN DIAGNOSIS AND TREATMENT OF CANCER

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ABSTRACT

The diagnosis and treatment of cancer remains a key challenge for biomedical technology. The majority of conventional chemotherapy treatments are associated with side effects that may include hair loss, nausea, or myocardial infarction. In addition, there may be an increased risk of infertility, neurotoxicity, nephrotoxicity, vascular toxicity, complications. Alongside these issues, other problems associated with conventional chemotherapy include difficulties in clinical administration of drugs, multidrug-resistant tumors, and the inability of the drugs to access the specific tumor site. Due to the above issues, much research has focused on different approaches toward targeting cancer with drugs that show maximum treatment efficiency with minimum side effects in vivo. Cancer is one of the leading causes of death worldwide and early detection provides the best possible prognosis for cancer patients. Quantum Dots (QDs) and Carbon Nanotubes (CNTs) have shown potential in biomedical applications and have received considerable interest in recent years, especially with respect to their future application in the field of cancer diagnosis and cancer treatment. QDs are semiconductor inorganic nanomaterials ranging from 1–10 nm, consist of an inorganic core, an inorganic shell and aqueous organic coating. The size of the inorganic core determines the wavelength (color) of light emitted following excitation. CNTs comprise well-ordered carbon atoms with a high aspect ratio, high surface area, ultralight weight, high loading capacity, and high chemical and thermal stability. The QD-CNT complex has applications in engineering through to biomedical sciences. Massive developments have been taking place in the usage of QD-CNT complexes in the optoelectronic and biosensor fields. One of the major applications of these materials is intracellular fluorescent imaging. In contrast to spherical nanoparticles, longer nanotubes have a larger inner volume, which allows the CNT to be filled with anticancer drugs and potentially enabling CNTs to deliver anticancer drugs to a given site.
INOVATIVE SEAMLESS TECHNOLOGY IN SOFT GELATIN CAPSULES
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Capsules are gelatin shells filled with the ingredients that make up an individual dose. They comprise for about one fifth of all prescriptions dispensed, thus there is the need to develop new techniques to achieve higher efficacy at reduced cost. The seamless capsules are superior as compared conventional capsules in many aspects they have uniform dissolution rate all over the surface, no leakage of drugs, uniformity of wall thickness, simpler method of manufacturing thus they are economical. The seamless capsule according to the present invention provides a capsule having an encapsulated liquid and a capsule film that encloses the encapsulated liquid, wherein: the capsule film contains gelatin; said gelatin is a gelatin with a bloom value of 50-190. The principle behind this technology is interfacial tension which leads to unique dropping technology. The inner nozzle, of the concentric double nozzle, ejects core contents and the outer nozzle supplies the heated shell solution. Through this simultaneous action, the shell solution wraps the core substances, due to two major forces gravity - interfacial tension & sudden fall in temperature leads to formation of seamless capsules. It is superior in the stability of the capsule content, and permits a high content of a capsule content. Moreover, the present invention can provide a high quality seamless capsule free of an eye or with an extremely small eye even if present, which shows uniformity in the thickness.
“INJECTABLE SMART SPONGES” – AN ADVANCED OPTION FOR DIABETES TREATMENT

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ABSTRACT

Diabetes is a chronic condition associated with abnormally high levels of sugar (glucose) in the blood. The two types of diabetes are referred to as type 1 and type 2. A wide variety of drugs are used as antiabetics, but a number of side effects like chills, cold sweat, shaking, rapid heart rate, weakness are associated with them and in case of parenteral insulin pain during injection and other hypersensitivity reaction may occur. Thus a number of advancements are under development to provide safe and effective medication to the diabetics. One of a new drug delivery technique has been developed by researchers for the treatment of diabetes in which a sponge-like material surrounds an insulin core. The sponge expands and contracts in response to blood sugar levels to release insulin as needed. The researchers created a spherical, sponge-like matrix out of chitosan. When a diabetic patient’s blood sugar rises, the glucose triggers a reaction that causes the nano-capsules’ enzymes to release hydrogen ions which bind to the molecular strands of the chitosan sponge, giving them a positive charge. The positively charged chitosan strands then push away from each other, creating larger gaps in the sponge’s pores that allow the insulin to escape into the bloodstream. As the insulin is released, the body’s glucose levels begin to drop. This technique essentially replicates the functionality of β-cells within the pancreas, but further research needs to confirm the safety and efficacy of this technology within diabetic patients. Moreover, the technique allows for other therapeutic compounds to be delivered in response to certain biomarkers, potentially allowing for more targeted treatment of cancer and other diseases.
ABSTRACT

Tablets, a dosage form that stood the test of time have evolved from being a simple uncoated tablet for oral administration giving immediate release, to sustained release systems that can be implanted into the body. Recent trend in tablet technology reduce the manual input and performing the process validation of each unit operation thus ensuring enhance product quality and reliability. Advances in tableting technology are a vast area for discussion. Tablet formula, the excipients used, the production process starting from receipt of raw material through the intermediate processing steps to the finished product at high speeds; the entire documentation too is seeing automation. The recent trends in tablet formulation include versatile immediate release tablet systems which involve fast dissolving drug delivery systems, orally disintegrating tablets/ orally dispersible tablets, orally dispersible mini tablets, mouth dissolving/fast dissolving tablets, novel fixed dose combination, modified release tablet formulation include ring cap coated tablet, layered tablets, novel chewable sustained release tablet and direct compression medicated chewing gum. Research is also advancing into obtaining excipients from natural sources such as Lycoat, Readily coat, Instamodel and Instanute DR. Novel technologies include Double punch technology using OSDrC® technology/one-step dry-coating technology. This rotary tableting machine has 54 double punches and three feeders. These technologies will promote the improvisation of the conventional dosage form and future prospective of the same.
ABSTRACT
The condition of Indian pharmaceutical industries is changing like never before due to closing of reverse engineering. Being a signatory country in GATT, India is bound to follow rules in treaty. Patent provide a large benefit to the pharmaceutical industry for the development of new medicines to cure the diseases which are untreatable. The drug industry is facing major challenges. Around the world it is being a challenge for last one or two decades to innovate the concept and mechanism to improve the drug development process. Moreover competition from generic giants is giving tough challenge to establish a product. Nexavar® has become the first branded pharmaceutical which is being produced in generic format also using compulsory license provision by Hyderabad based Natco Pharma. Owing to this and case of Gleevec®, western world is raising eyebrows over certain issues like the granting of unwarranted compulsory licenses, the unjust revocation of valid patents, and the rejection of patentability of inventions in India. This presentation will take reader through various provisions of compulsory license, legal battle besides ramification of this ruling of Indian court in the favour of Natco pharma and against Swiss drug major Novartis.

KEY WORDS: Patents, compulsory license, patent evergreening, Nexavar, 180 days exclusivity
STERILIZATION METHODS FOR PHARMACEUTICAL PRODUCTS
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ABSTRACT

The safety of Pharmaceutical products is of prime importance. The preparations which are used directly in systemic circulation should be free from any pathogenic Micro organism as it may cause serious side effects in body. For eliminating such pathogenic micro organism the sterilization methods are used. Sterilization is a term referring to any process that eliminates (removes) or kills all forms of microbial life, including transmissible agents (such as fungi, bacteria, viruses, spore forms, etc.) present on a surface, contained in a fluid, in medication, or in a compound such as biological culture media. Sterilization can be achieved by applying heat, chemicals, irradiation, high pressure, and filtration or combinations thereof. The various methods of sterilization are: Thermal (Heat) methods, Radiation method, Filtration method, Chemical Method Gaseous method. The choice of method for sterilization depends on type of material to be sterilized like pasteurization for food products. The all methods are able to kill the pathogenic micro organism and ensure safety of Pharmaceutical Products.
EMULGEL: A NOVEL DRUG DELIVERY SYSTEM CONSIST OF EMULSION IN GEL
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ABSTRACT
Emulgel are emulsions either of the oil-in-water or water in oil type, which are gelled by mixing with a gelling agent. Emulsified gel is stable and better vehicle for hydrophobic or water insoluble drug. The emulsion gels are hydrogels containing randomly distributed oil micro droplets. Emulgel possess advantages of Both emulsions and gel. The emulsions have a high ability to penetrate the skin. In addition, the viscosity, appearance, and degree of greasiness of cosmetic or dermatological emulsions can be controlled. While Gels have several favorable properties such as thixotropic, greaseless, easily spreadable, easily removable, emollient, non staining, compatible with several excipients, and water-soluble or miscible properties. The rheological properties and the breakdown behavior of gels filled with emulsions droplets can be varied by changing the interactions between oil droplets and gel matrix, the oil content and the oil droplet size. Several Emulgel preparations are available in the market in different topical preparation e.g. creams, ointment, and powders for the purpose of local anti-inflammatory, Antifungal and anti Bacterial effect.
FLOATING PULSATILE DRUG DELIVERY SYSTEM WITH TIME-CONTROLLED EXPLOSION SYSTEM

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ABSTRACT

Time-controlled explosion system (TES) with floating pulsatile drug delivery systems is deliberate to bring forth programmable lag phases preceding a prompt and quantitative release of drug. To impersonate the utility of living systems, it is imperative to develop new-fangled drug delivery devices to accomplish pulsed delivery of drugs at encoded time intervals. FPDDS concept was convenient to increase the gastric dwelling of dosage form having a lag phase followed by Time-controlled explosion system. Diseases wherein FPDDS are promising include, peptic ulcer, asthma, cardio-vascular diseases, arthritis. To trounce restrictions of various loom imparting buoyancy and lag controlling were primed by Floating pulsatile drug delivery systems with Time-controlled explosion system (TES) like soluble or erodible coating, swelling and rupturable membranes, capsule shaped system and the multi particulate system are primarily involve in the control of release. Floating pulsatile drug delivery systems with Time-controlled explosion system showed excellent lag phase followed by explosion release in distal part of small intestine which give site and time specific release of drugs acting as per chronotherapy of diseases.

KEYWORDS - Time-controlled explosion system, FPDDS, Lag Phase.
FAST DISSOLVING ORAL FILMS: A NEW APPROACH TO BUCCAL DELIVERY

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ABSTRACT

Fast dissolving drug delivery system was first developed in late 1970s. The buccal region is widely used route of administration for the systemic delivery of drugs. It dissolves rapidly in oral cavity within seconds and reaches to the systemic circulation. This oral film offers quick onset of action, enhancing bioavailability, accurate dosing, better efficacy, no need of water, no fear of choking and reduces first pass metabolism, provide good mouth feel. These films are suitable for pediatric and geriatric patients, who have difficulty in swallowing & became a novel and widely accepted form by consumers for delivering vitamins and personal care products. Fast dissolving oral films (FDOFs) are formulated using hydrophilic polymers, plasticizer, flavor, colors, surfactant, saliva stimulating agent and sweeteners using solvent casting method, hot melt extrusion, solid dispersion extrusion, Semisolid casting, rolling method etc.

KEYWORDS: Fast dissolving oral film, film forming polymer, solvent casting method.
In Situ Gel: A Novel Mucoadhesive Gelling System for Controlled Drug Release

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ABSTRACT

In Situ Gels are mucoadhesive type of gelling system which gives controlled drug release on the site of application. In situ gels are liquid at room temperature and when administered in biological system it converted in gel & this formation of gel depends on some factor like change in temperature, change in pH & ionic cross linking. Polymers used in In situ gel formation are Gellan gum, Alginic acid, Pluronic F127, Xyloglucan, Pectin, Xanthum gum, Chitosan. In situ gel can be administered by various routes like oral, rectal, ocular and vaginal. In situ gels are having various advantages like easy administration, controlled drug release, prolong drug release. Evaluation parameters of In situ gels include clarity, Sol-Gel transition temperature, Gel-Strength, Viscosity and rheology, In-vitro drug release studies.

KEYWORDS: In Situ gel, Controlled Drug Release, Polymers.
AICTE SPONSORED NATIONAL SEMINAR on
Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives

PHARMACOLOGY

19th October, 2013

(NBA Accredited UG Programme)
ALTERNATIVES TO ANIMALS TESTING: TESTING WITHOUT USING ANIMALS
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ABSTRACT
Moreover saving countless animal lives, alternatives to animal tests are competent and unswerving. There is no qualm that the paramount test species for humans are humans. It is not conceivable to infer animal data directly to humans due to interspecies variation in anatomy, physiology and biochemistry. Alternative testing methods have many advantages over traditional animal tests including being more humane but implementing an alternative from idea to acceptance can take years. Two major alternatives to in vivo animal testing are in vitro cell culture techniques and in silico computer simulation. The 3T3 Neutral Red Uptake Phototoxicity Test uses cells grown in culture to assess the potential for sunlight-induced ("photo") irritation to the skin. Using blood from human volunteers to test for the presence of fever-causing contaminants in intravenous medicines can save hundreds of thousands of rabbits each year from traditional "pyrogen" tests. EpiSkin™, EpiDerm™ and SkinEthic each composed of artificial human skin can save thousands of rabbits each year from painful skin corrosion and irritation tests. Alternatives to the use of animals in toxicity testing include replacing animal tests with non-animal methods, as well as modifying animal-based tests to reduce the number of animals used and to minimize pain and distress. Non-animal tests are generally faster and less expensive than the animal tests they replace and improve upon.

KEYWORDS: Cell Culture, Non-animal tests
A REVIEW ON EFFECTS OF RADIATIONS EMITTED BY VARIOUS ELECTRONIC DEVICES ON LIVING BEINGS

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ABSTRACT

In today’s era it is very difficult to survive without electronic device especially the mobile phones. The invention of mobile phones and other electronic devices was a huge revolution. People are swimming in the sea of electromagnetic radiation. Radiation consists of electromagnetic waves in the form of gamma rays, light or particles like protons, neutrons, and electrons. All radiation affects the matter by transferring its energy to the particles in the matter. The electromagnetic radiations are having some unwanted effects on living beings. The radiation emitted by various electronic devices produce various fatal diseases they may affect the brain, ear, reproductive system, heart and sensory organs and also can causes cancer. In short, electronic devices are slow poisons. The radiation also affect other living creatures such as bees and migratory birds and also the wild animals it lead to extinction of various species of bees and birds. The current review deals with different aspects of biological effects of radiation on living beings that are emitting by the electronic devices like cell phone, car remotes, TV remotes, radios, microwave oven etc.

KEYWORDS - Electronic device, Radiation, Cell phones, Organs, ADME, Energy, Living Being
DOSE DETERMINATION FOR EXPERIMENTAL PHARMACOLOGY
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ABSTRACT
Every drug molecule has to go through rigorous investigation in patients and healthy subjects through clinical trial. For such studies dose determination is one of the most crucial steps. Clinical dose is determined by considering the safest dose in animals (pre-clinical studies). There are certain protocols to study new entity or herbal extract etc. in animals e.g. OECD guidelines, LD-50 study etc. are recommended. This presentation is an effort to compile all such studies of dose determination in experimental animals in a comparative and exhaustive way.

KEY Words: Experimental animals, OECD guidelines, dose determination
ELECTROCEUTICS: A REVIEW ON ELECTROCEUTICAL THERAPY

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ABSTRACT
The nervous system of the human being controls and regulates the various physiological functions and biochemical reactions of the body through impulse conduction. The electroceutics is a science that deals with the applications of controlled, specific-parameter of electrical impulses. In this, electrical current is altered via special step-down transformers into electric impulses that mimic the human bioelectric system. The two classes are there The Stimulatory Class: Physiological effects induced by repeated action impulse propagation in excitable cells cell membrane depolarization and repolarization activity. Multi-facilitatory Class: Physiological effects induced without repeated action impulses. There are some known mechanisms; hormone/ligand imitation, cellular oscillo/torsional response, ionic transport, sustained membrane depolarization, second messenger formation. It is useful in all diabetic neuropathy, epilepsies, arterial ischemia. These specific treatments have provided a new concept of discovery and it’s time to apply this knowledge in other clinical applications

Keywords: - Electroceutical, Impulse conduction, nervous system, cell, polarization
ICDR: NOVEL SYSTEM FOR BLADDER CANCER TREATMENT BY INCREASING DWELL TIME

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ABSTRACT

Bladder cancers are transitional cell carcinomas and are the fourth most frequent solid tumour cancer in men and the seventh in women, with more than 350,000 new cases diagnosed worldwide annually. This article aims to describe why longer chemotherapy dwell time is critical for optimal treatment of bladder cancer and how this can be achieved via a simple and sophisticated delivery system. Most patients suffer from non-muscle invasive bladder cancer (NMIBC) tumours disease, which have a high survival rate but also high recurrence rate leading to lifelong treatment and monitoring. The traditional treatment of this cancer is surgical removal of the tumour, commonly known as transurethral resection of the bladder tumour (TURBT) followed by a series of periodic intravesical chemotherapy instillations. This approach was proved to be insufficient since drug concentration is immediately reduced and washed out due to continuous urine creation and voiding. Intravesical chemotherapy is used to delay tumour recurrence, not manageable by surgical method. The experiment was carried out on patient with intravesical Mitomycin C (MMC) using 30 and 60 minute dwelling times. “Prolongation of intravesical treatment dwell time is imperative for enhancing the anti-tumour effect of the instilled chemotherapy”. The novel internal cavity drug retention (ICDR) system is thermosensitive hydrogel with unique reverse thermal gelatin properties, which enable it to convert from a liquid state when cool into a gel at body temperature. Since the gel dissolution is gradual it delays the voiding of drug from bladder once the urination occur as well as decreases drug dilution by the ongoing produced urine which continuously enter the bladder.

It was found that tumours were completely removed in patient after six weekly instillations of MMC with ICDR. The preclinical results demonstrate that ICDR increases the availability of MMC to the tissue and prolong its exposure to systemic circulation.
ABSTRACT

Cow urine is not the lethal waste material. Traditionally cow urine is recommended as a healing aid in Ayurveda. In ayurvedic text PanchagavyaGhrita, Panchgavya, a term used to describe a formulation constituted with five major substances like urine, milk, ghee, curd, and dung obtained from cow. This distinctive kind of the treatment called as Cowpathy or Panchgavyapathy and it has been reported to be advantageous even for deadly diseases like Cancer, diabetes, and AIDS. It has been granted US Patents for its medicinal properties, particularly as a bioenhancer and increased the efficacy of antibiotics. According to the literature, it has been observed that cow urine increases the potency of “Taxol” (paclitaxel) against MCF-7, a human breast cancer cell line, in in vitro assays (US Patent). Cow urine exhibits the property of Rasayana tattwa responsible for modulating various bodily functions, including immunity. It augments B- and T-lymphocyte blastogenesis; and IgG, IgA and IgM antibody. It also increases secretion of IL-1 and IL-2, phagocytic activity of macrophages, and is thus helpful in the prevention and control of infections. Its anticancer effect is due to uric acid’s and allantoin. The article reveals the importance of cow urine and its products. Cow urine distillate is more effective as a bioenhancer than cow urine, and increases the effectiveness of antimicrobial, antifungal and anticancer drugs. The advantages of cow urine are easily availability at the every place and very economic in price.
OBESITY & ITS PHARMACOTHERAPY: AN UPDATE

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ABSTRACT

Obesity is among the biggest health issue not only in developed nation but also in developing countries. Obesity is now very common in various geographies. It is a threat which is being replacing the malnutrition and infectious disease as most significant contributor to ill health. Obesity is a condition where body mass index (BMI) is over 30 kg/m². Patient with BMI between 25 to 29.9 are considered as overweight, but not obese. Many synthetic drugs are available in market for treatment of obesity. Eg:- Orlistat (Xenical®), Sibutramine (Reductil®). Sibutramine and orlistat, possess the risk of some side effects like depression, anxiety, gall bladder diseases, liver damage, allergic reaction, gastrointestinal diseases. Penetermine and Topiramate (Qsymia®) in combination is also used in the treatment of obesity. This drug help in reducing In 3-4% of the body weight. In this presentation an attempt has been made to update readers about pharmacotherapy of obesity.

KEY Words:- Obesity, Sibutramine, Orlistat, Penetermine & Topiramate & side effects of this drugs.
PHARMA COLOGICAL INTERVENTIONS FOR ENHANCING COGNITIVE FUNCTIONING
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ABSTRACT
Cognitive enhancement takes many and diverse forms. Investigating how different pharmacological compounds may enhance learning, memory, and higher-order cognitive functions in laboratory animals is the first critical step toward the development of cognitive enhancers that may be used to ameliorate impairments in these functions in patients suffering from neuropsychiatric disorders. Various methods of cognitive enhancement have implications in which a broad overview of how distinct classes of pharmacological compounds may enhance different types of memory and executive functioning, particularly those mediated by the prefrontal cortex. These include recognition memory, attention, working memory, and different components of behavioral flexibility. A key emphasis is placed on comparing and contrasting the effects of certain drugs on different cognitive and mnemonic functions, highlighting methodological issues associated with this type of research, tasks used to investigate these functions, and avenues for future research. Studies of the neuropharmacological basis of cognition in rodents and non-human primates have identified targets. At the same time, these technologies raise a range of ethical issues. For example, they interact with notions of authenticity, the good life, and the role of medicine in our lives. Present and anticipated methods for cognitive enhancement also create challenges for public policy and regulation.

KEYWORDS: cognitive enhancers, memory modulation, attention, working memory, response inhibition, extinction, behavioral flexibility
Sponsored

National Seminar

Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives

(19th October, 2013)

Seminar Report

Venue: Smriti College of Pharmaceutical Education (SCOPE)
www.scopeindore.info, E. Mail: scopeindore@gmail.com
Smriti College of Pharmaceutical Education had organized one day AICTE Sponsored National Seminar on Drug Discovery and Development: Traditional Medicine and Ethnopharmacology Perspectives on 19th October 2013.

The objective of the seminar was to provide novel inputs into the drug development process on Traditional medicine in search for economically valuable natural resources by pharmaceutical industries.

The seminar had been attended by 240 delegates and got benefited by getting the novel ideas shared by renowned academicians like Prof (Dr.). V. K. Dixit Former Dean of Dr. Harisingh Gour University, Sagar, Prof (Dr.) Shailendra Saraf Professor, Institute of Pharmacy Pt. R.S. University Raipur, Prof (Dr.) Swarnlata Saraf Head, Institute of Pharmacy Pt. R.S. University Raipur, Dr. S. Nayak, principal, Bansal College of pharmacy, Bhopal and Mr. Shashi Alok, Assistant Professor, Institute of Pharmacy, Bundelkhand University, Jhansi had shared their research experience and thoughts on various aspects of current research in herbal drug discovery involving a multifaceted approach combining botanical, phytochemical, biological, and molecular techniques.

The seminar had inaugurated by the chief guest Dr. Rijwani Director, Promed Pvt. Ltd., Indore and the guest of honor Mr. Saket Sharma, HR Manager Ranbaxy Laboratories Limited Dewas, India. The seminar is also attended by various
people from industry like Mr. Himanshu Shah Director, Vishal Pharma, Indore.

Dr. Rijwani has shared that how his company is working on increasing the concentration of herbal volatile oils in various formulations.

The seminar was started by the enlightening words of the Director of Smriti college of Pharmaceutical Education and the chief coordinator Dr. Sanjay Jain about the importance of drug discovery and development on herbal traditional medicines.

The accepted abstract book had been released during the ceremony, which will be published in IJPSR.

Prof (Dr.). V. K. Dixit had shared his wide experience and knowledge in the field of new drug discovery of herbals in antifertility. He had shared the challenges we face during the process of new discovery.

Prof Shailendra Saraf had given more emphasis on various aspects of selecting appropriate high-throughput screening bioassays, and the scale-up of active compounds. Prof (Dr.) Swarnlata Saraf had discussed about the role of herbals new chemical entity development with relation to cosmetic products.

Mr. Shashi Alok had shared the market
trends of pharmaceutical industry in new drug discovery and generics. Dr. S. Nayak had put more insight on current requirements in drug development from herbal sources on the basis of ayurvedic aspects.

The poster session was followed by the seminar in which nearly 80 posters accepted by the scientific committee had been displayed. The abstracts for poster presentation had been called with relation to distinctive themes of Pharmaceutical Sciences: Pharmaceutical Technology, Medicinal Chemistry, Pharmaceutical Analysis, Quality Assurance, Pharmacognosy, Phytochemistry, Pharmacology and Toxicology and Regulatory Affairs.

152 abstracts had been received by the scientific committee after the proper validation 90 abstracts had been approved for the poster presentation.

The posters had been evaluated by the judges, the delegates who achieved first and second position had honored with certificate and memento.

The conference was successfully concluded with high tea. The organizing committee had put all their efforts to make this even a successful one.