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Abstract Book

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Keynote / Invited Speakers

POLYPHARMACOLOGY OF NATURAL PRODUCTS HARNESSED FROM TERRESTRIAL AND MARINE BIODIVERSITY IN MAURITIUS–CURRENT STATUS AND FUTURE PERSPECTIVES

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ABSTRACT

Endowed with a rich terrestrial and marine biodiversity, the tropical island of Mauritius is part of the Mascarene Islands and also the home to several exotic/endemic plants and a unique marine ecosystem. Since the first settlement of man over the island more than 300 y ago, the local inhabitants have been in proximity with nature and exploited natural resources particularly plants as a major source of medicine to assuage suffering emanating from a wide range of minor to chronic ailment conditions. Over the years, enough experience surrounding the medicinal use of plant species has been gathered by the local inhabitants through trial and error as well as sharing of traditional knowledge from one generation to the other. The Mauritian biodiversity has the inherent potential to be turned into "green gold" and commercial assets. With such a rich and unique terrestrial and marine biodiversity, Mauritius could become the first hub and platform for BioProduct development in Africa. To this effect, during the past decades research in Mauritius has been geared towards evaluation of the pharmacological properties of such biodiversity using *in vitro, in vivo* and *in silico* studies. This presentation will highlight recent endeavours to document and evaluate the utilisation of herbal and marine natural resources in the design and development of new drug. The main focus of this presentation will be based on the results of some common herbs and spices as key inhibitors of enzymes linked to clinical conditions such as amylase and glucosidases (diabetes), tyrosinase (hyperpigmentation), cholinesterases (neurodegenerative diseases), and lipases (obesity). In addition, some non-pharma target enzymes are now being exploited such as sucrose, urease, and maltase amongst others. Following preliminary screening, kinetic studies and computational studies have been used to highlight mode of inhibition and binding pose of bioactive compounds. In conclusion, natural product research in Mauritius is currently experiencing a boom which is anticipated to set the stage for future collaboration in an endeavour to sustainably use biomedicine from local bioresources.

Keywords: Mauritius, Medicinal plants, Enzymes inhibitors, *In silico*, Indian Ocean

NOVEL DRUG DELIVERY SYSTEMS AND INNOVATION–TRANSITIONING PHARMACEUTICAL WORLD

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ABSTRACT

The global pharmaceutical market was estimated at USD 1.2 trillion in 2017 and is expected to reach nearly $1.4 trillion in 2020 with forecast to grow at a CAGR of 5-6% as spending growth moderates. Global pharmaceutical markets are in midst of major setbacks and discontinuities. While the developed markets are experiencing major slowdown, the emerging markets are set to attract major pharma giants due to their increasing projected importance in the coming decades. Last few years have been challenging years for pharma industry, amidst stringent price cuts and governmental regulations, bio complexities, deriving of non-infringing patent options, difficult regulatory approval environment for new products as well as areas of research that are still seeing limited success. This has triggered both small and big pharmaceutical companies to re-align their strategies to cope up with this dynamic situation and think in an innovative way. A number of factors are going to be contributing to the globalization of the pharmaceutical industry. Chief among these are the convergence of global quality standards and practice under the influence of modern technology as per market requirements. NDDS and formulation technologies plays a key role to meet unmet needs, maximize efficacy, fuel product pipelines, improve patient compliance, and simplify therapeutic processes. Incremental innovation by combination products, nanomedicines and differentiated products presents promising commercial and therapeutic opportunities. With domestic market gaining momentum and becoming equally important as the international market, pharmaceutical companies will require greater cooperation from national regulators to deliver cost-effective lifesaving products, which they could market faster within the given regulatory framework.

Keywords: Global pharma market and the indian pharma industry, Current challenges to pharma industries, Ndds, Formulation technologies

DRUGS FROM OUR ANCESTORS-ETHNOPHARMACOLOGY AND VALIDATION

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ABSTRACT

Ethno pharmacological uses of medicinal plants are one of the most successful areas to find new therapeutic agents in multidisciplinary field and pharmaceutical industries. Traditional medicines (TM_S) are an integral component of alternative health care systems. India has arich wealth of TMs and the potential to accept the challenge to meet the global demand for them. Ayurveda, Yoga, Unani, Siddha and Homeopathy (AYUSH) medicine are the major healthcare systems in Indian Traditional Medicine. These systems of medicines are being practiced in India for promotion of healthcare from long back. India has approximately 47,000 plant species and about 15,000 medicinal plants, among them 7,000 plants used in Ayurveda, 700 in Unani medicine, 600 in Siddha medicine. The 65% population in rural India is using Ayurvedic medicines. Traditionally, 2,000 species in Ayurveda, Siddha and Unani medicine (ASU) are used by classical traditions. The Ministry of AYUSH is formed in 9th November 2014 with a view to providing focused attention to development of Education and Research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy systems. In India and abroad AYUSH medicines are gaining popularity due to their uniqueness and global acceptance. The plant species mentioned in the ancient texts of different Indian systems of medicines may be explored with the modern scientific approaches for better leads in the healthcare. This development was supported by the diverse biodiversity in flora and fauna due to variations in geographical landscaping.

Development of this traditional system of medicines with the perspectives on safety, efficacy and quality will not only help to preserve this traditional heritage, but also help to rationalize the use of natural products in the healthcare. Scientific validation of all the parameters is a very vital step towards safer herbal medicine so much so to strengthen their uses in healthcare. Traditional medicine requires the confluence of modern techniques and integrated approaches related to their research in various fields of science through International coordination and cooperation. Secondary metabolites from medicinal plants are widely respected for their unique chemical and biological features, and are familiarizing through world because they offer natural ways to treat diseases and promote healthcare. Scientists around the world are searching for medicinal plants as alternative medicine and their potential in health care. New technology and science has developed many techniques and systems to raise the traditional medicine compounds for global existence. Establishment of global and/or regional regulatory harmonization is necessary for its development and promotion through scientific validation. The potential of AYUSH medicines need to be familiarized throughout the world for better human life.

Keywords: Drugs, Ancestors-ethnopharmacology

EFFECT OF CHALANA KRIYAS, YOGASANA, KAPALABHATI, PRANYAMA, SURYA NAMASKAR, MEDITATION IN MANAGEMENT OF HYPERGLYCEMIA

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ABSTRACT

Diabetes is considered as silent killer. Indian people are more prone to diabetes than western people. Existing drugs are not sufficient to cure these diseases effectively and number of patients is increasing every year. Most of drugs for treatment of diabetes are synthetic compounds that are required for long time period or throughout life. Such drugs are costly and have adverse effects on other organs; however, appropriate yoga and adequate diet have beneficial effects on other organs also. Therefore, such natural, economical, preventive and supportive system of therapy should be explored. In this context, yogic centre of SCOP facilitates an ancient powerful practice of yoga for prevention and control of diabetes. The Yogic practice involves chalankriya, yogasana, kapalabhati, pranyama, surya namaskar and meditation. The practice is a holy, simple, natural and economical that not only affect whole body and but mind also. In this practice, Common yoga protocol follows that involves chalana kriyas, yogasana, kapalabhati, pranyama, surya namaskar and meditation. The chalana kriyas or yogic suksma vyayamas help to increase microcirculation. Yogasana is a posture in harmony with one's inner consciousness. Due to various twists, stretches and strains in the body while performing asanas, the internal organs are stretched and subjected to strain. This increases the blood supply, oxygen supply to the organs increasing the efficiency and functioning of the organ. Stretching various glands result in increased efficiency of the endocrine system. Asanas like dhanurasana (bow pose in prone position), ardhamatsyendrasana (half spinal twist), vajrasana yoga mudra, pavan muktasana, sarvangasana, halasana, matsyasana, rotation of legs, cycling have been found useful in diabetes. These asanas have positive effect on pancreas and also insulin functioning. Kapalabhati is forceful exhalation by contracting the abdominal muscles, without any undue movements in the chest and shoulder region. It rejuvenates the whole body. It balances and strengthens the nervous system, respiratory system and tones up the digestive system. Pranyama or breath control improves insulin action, reduce stress and weight, flush out toxins and affect endocrine glands. Nadi shodhan pranayama has calming effect on nervous system, which reduces stress levels, helping in diabetes treatment. Surya namaskar is a package of 12 postures which has benefits of both exercises and asanas. Similarly, Practice of meditation is especially useful in management of stress. Above mechanism suggested that chalana kriyas, yogasana, kapalabhati, pranyama, surya namaskar, meditation are useful in management of hyperglycemia.

Keywords: Chalana kriyas, Yogasana, Kapalabhati, Pranyama, Surya namaskar, Meditation, Hyperglycemia

INVESTIGATION OF AFRICAN MEDICINAL PLANTS–PHYTOCHEMICAL ANALYSIS, PHARMACOKINETIC HERB-DRUG INTERACTIONS INVOLVING TRADITIONAL HERBAL MEDICINES AND CYTOCHROME P450 ENZYMES–*IN VITRO* METABOLISM, mRNA EXPRESSION AND PHYTOCHEMICAL FINGERPRINTING STUDIES

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ABSTRACT

This study investigated the potential of popular traditional African herbs consumed by HIV/AIDS and TB patients, viz., *Withania somnifera*, *Glycyrrhiza glabra*, *Astragalus membranaceus*, *Inula helenium*, *Althaea officinalis* and *Ocimum basilicum*, to inhibit the cytochrome P450 enzyme (CYPs) CYP2B6 and the metabolism pathway of rifampicin and their ability to induce certain CYPs. The study was undertaken in three phases: (1) *in vitro* assays involving human liver microsomes (HLM) to assess the inhibitory potential of the extracts on the cytochrome CYP2B6 and the metabolism of rifampicin to 25-O-desacetyl rifampicin, (2) investigating the induction of mRNA expression of CYPs in HepG2 cell lines, using reverse transcription polymerase chain reaction (RT-PCR) and agarose gel electrophoresis (AGE), and (3) phytochemical fingerprint analysis, identification and relative quantification of the major phytoconstituents present in each active extract using LC-MS/PDA.The aqueous and methanolic extracts of *O. basilicum* showed reversible and time-dependent inhibition on CYP2B6 activity (TDI IC_{50}s 33.35µg/ml, 4.93µg/ml, IC_{50} shift-fold>1.5) while the methanolic and ethanolic extracts inhibited the formation of 25-O-desaacetyl rifampicin (IC_{50}s 31µg/ml, 8.94 µg/ml). *I. helenium* extracts inhibited CYP2B6 and rifampicin metabolism. Only the methanolic and ethyl acetate extracts of *W. somnifera* inhibited 2B6. TDI was mainly observed between the herbal extracts and CYP2B6, with IC_{50} shift-fold>7 for *O. basilicum* extract. The ethanolic and methanolic extracts of *A. officinalis* showed most induction compared to the other extracts on CYP3A4, with a fold-response>47%. The phytochemical analysis revealed presence of flavonoids, phenols, glycosides, saponins and terpenoids within the herbs, including rosmarinic acid, isopelletierine, salvigenin, tanacetol A, macrophyllilactone B, fukugetin, calycosin, formononetin, astragalosides, licochalcones, althaealactones, eupatorin, caffeic, chicoric, isocitric and quinic acids, as well as withanolides and isoalantolactones. The *in vitro* assays and fingerprint analysis of all extracts predicted the possibility of inhibitory/inducing effect of *A. membranaceus*, *I. helenium*, *O. basilicum*, *W. somnifera* and *A. officinalis* on CYPs.

Keywords: LC-MS/PDA Fingerprinting, Elecampane, Marshmallow, Basil, Cytochrome P450, Phytoconstituents, mRNA, Inhibition, Induction

BIOLOGICAL ACTIVITIES OF MARINE SPONGES FROM PERSIAN GULF A REVIEW

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In recent years, different researches have been explained that marine organisms are a rich of secondary metabolite that can be used as new pharmaceuticals. Persian Gulf is one of the largest covert of aquatic animals. Different types of sponge species are existing in Persian Gulf, although identification of sponges and biological activities of them in Persian Gulf and the islands not received widespread attention, but the little studies shows that sponges produce natural components with biological activities. Some of sponges studied in the Persian Gulf, such as; *Iophon laevistylus* collected from Faror Island*, Gelliodes spp., Ircinia echinata, Spheciospongia inconstans*, *Spheciospong* spp., from Nay Band Bay, *Axinella sinoxea, Dysidea avara, Dysidea pallescens* from Larak Island and *Ircinia mutans* from Kish Island have antibacterial activities on gram positive bacterial; *Bacillus subtilis, Staphylococcus aureus* and *Ircinia echinata* and *Ircinia mutans* have antifungal activities on *Candida albicans* and *Aspergillus fumigatus.* Another important biological activity of sponges collected from Persian Gulf, is cytotoxic activity. Studies show that; *Iophon laevistylus* collected from Faror Island, *Axinella sinoxea, Dysidea avara, Dysidea pallescens* and *Ircinia echinata,* from Larak Island have cytotoxic activity against KB/C152, HUT-78/C185 cell lines. The studies of biological activities and the potential in the water of Republic Islamic of Iran, especially in the Persian Gulf showed the isolation and purification of compounds will be the effective step in the production of anticancer and antimicrobial medicine.

Keywords: Sponge, Secondary metabolites, Antibacterial, Antifungal, Cytotoxic, Persian gulf

SECONDARY METABOLITES PRODUCTION: PHARMACEUTICAL INDUSTRY

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ABSTRACT

From earliest days mankind has used plants in an attempt to cure diseases and relieve physical sufferings. There are an estimated 250,000 medicinal plants on earth today. Of these, only six per cent have been analyzed chemically and limited number of pharmacological studies. According to the WHO, 80 percent of the world population relies on plant medicines for their health care needs. Over 40% of medicines now prescribed in the world contain chemicals derived from plants. Plant cell tissue and organ cultures (PCTOC) have become an increasingly attractive alternative for the production of various high molecular weight molecules which are used as flavorings, fragrances, coloring agents and food additives. Many secondary metabolites have a complex and unique structure and their production is often enhanced by both biotic and abiotic stress conditions. Presently, about 1, 00, 000 secondary metabolites have been isolated from plants and they mainly belong to terpenoids and alkaloids. In the past two decades plant cell biotechnology has evolved as a promising new area within field of biotechnology, focusing on the production of plant secondary metabolites. Plant cell cultures are an attractive alternative way to produce of high-value secondary metabolites when compared to the whole plant. Each individual cell contains many enzymes, which can display different catalytic properties depending on the conditions to which they are exposed. A plant cell contains 800-1000 different type enzymes belonging to primary and secondary metabolism. Secondary metabolites controlled by genes and plant cells grown in culture produce the same product as well as produced by the intact plant. To enhance production *in vitro,* medium, environmental factors of the cultures are manipulated selects suitable cells/tissues on the optimal medium condition for high product yield. The production of secondary metabolites from plant cell and tissue culture, which are immediate relevance to the pharmaceutical industry is independent of environmental conditions and quality fluctuations. Armed with new tools in sequencing and bioinformatics, the genes that encode these plant biosynthetic pathways have become easier to discover, putting us in an excellent position to fully harness the wealth of compounds and biocatalysts (enzymes) that plants provide. The production residue has great potential for use as a raw material in dietary supplements, cosmetic and pharmaceutical products, or as a source of bioactive compounds to the pharmaceutical industry.

Keywords: Medicinal plants, *In-vitro* studies, Biotic stresses, Abiotic stresses, Elicitors, productions tools, yields, pharmaceutical industry, biological activity, health benefits

SYNTHESIS OF HETEROCYCLIC COMPOUNDS VIA MULTI-COMPONENT REACTIONS: THEIR MICROBIAL STUDIES AND ANTIPROLIFERATIVE ON HUMAN LUNG CANCER CELLS A549

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ABSTRACT

Synthesis of some heterocyclic compounds based on different multi-component reactions using green chemistry concepts. These synthesized products were confirmed by ^{1}H-NMR, ^{13}C-APT, IR and mass spectroscopy. The compounds were screened for antimicrobial activity against human bacterial pathogens, includes Gram-positive Gram-negative bacteria. The chemically synthesized compounds were evaluated the antiproliferative activity of selected compounds by cell viability (MTT) assay and dual AO/EB (acridine orange/ethidium bromide)-staining method in human A549 lung cancer cell lines. The viability of the treated cell was evaluated adopting MTT assay. According to apoptosis-associated changes in cell membranes during the process of apoptosis, a clear distinction is made between normal cells, early and late apoptotic cells, and necrotic cells. The crystal structure of selected compounds were solved by direct methods using single-crystal X-ray diffraction data collected at room temperature and refined by full-matrix least-squares procedures.

Keywords: Multi-component reactions, Green chemistry, Antiproliferative activity, MTT assay

DRUG REPURPOSING USING VIRTUAL HIGH THROUGHPUT SCREENING: FROM MODELING TO REALITY

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ABSTRACT

Drug repurposing, essentially means finding new use of existing drugs. In recent years drug repurposing has gained much popularity, owing to high cost and failure probability of the molecules during traditional drug discovery programme. Undoubtedly drug repurposing offers advantages of safety, out-licensing and good returns on the new indications. Among many methods used for drug repurposing, *In silico* methods have been considered as fast and cost effective. In view of potential role of computational techniques in drug repurposing, we have made an attempt to identify drug candidates with potential to inhibit soluble epoxide hydrolase (sEH), an enzyme which has attracted attention recently due to its involvement in hypertension and inflammation. As a starting point, a pharmacophore model was developed for sEH enzyme and used for screening of drug databank. This led to identification of drugs having pharmacophoric features similar to known sEH inhibitors. The chosen drug candidates were subjected to *in vitro* and *in vivo* evaluation. The results clearly showed that the chosen drugs are potent inhibitor of sEH and hence can be used in the treatment of hypertension and inflammation.

Keywords: Drug discovery, Epoxide hydrolase, Pharmacophore model, Drug databank

WONDERS AND WORRIES OF NANO MEDICINES IN HEALTH CARE

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ABSTRACT

From science fiction to reality, nano medicine brings fresh hope to the medical world. Nanomedicine is a offshoot of nanotechnologies. Medical applications, dominate today's market, with sales of $19.1 billion. Emerging nano medicine technologies could dramatically transform medical science today with their potential to address unmet medical needs and provide targeted therapy. Nano medicine can offer impressive resolutions for various life threatening diseases including effective drug delivery systems, drug discovery and development, medical diagnosis and devices. The advent of nanomedicine and techniques for the early diagnosis of diseases could usher in a new era of superior prophylactic or preventive medicine. By using preventive medicine, treatment for diseases could be initiated even before preliminary symptoms appear. Nanotechnology has the potential to bring major advances in medicine. Nanobots could be sent into a patient's arteries to clear away blockages. Surgeries could become much faster and more accurate. Injuries could be repaired cell-by-cell. It may even become possible to heal genetic conditions by fixing the damaged genes. Cancer treatment, drug delivery, drug development, medical tools diagnostic tests, imaging and novel drug delivery systems of herbal drugs using nano technology have a potential future. Nano medicine technology faces biggest challenges such as scalability. This perceived difficulty is attributed to the fact that manufacturing standards for nanomaterials and components are yet to evolve. Therefore, there is an urgent need for standardized manufacturing techniques; only then can nanotechnology become ubiquitous in everyday applications. Furthermore, since the characteristics of nanoscale matter are very different owing to their unique nature, there is a need for appropriate quality control measures. Concerns about the potential ill effects of engineered nanomaterials such as nanotubes through inhalation, ingestion, or absorption through the skin are increasing. Some of the specific challenges that we face are the exact usage and quality of materials, strategy, and research is motivated by immediate profits, more concentration on commercial products. Are nanotechnology inventions required by the society, what about nano toxicity and are products commercially viable are few question yet to be answered. In the longer term, perhaps 10–20 y from today, the earliest molecular machine systems and nanorobots may join the medical armamentarium, finally giving physicians the most potent tools imaginable to conquer human disease, ill-health, and aging.

Keywords: Nanomedicine, Targeted therapy, Drug delivery systems, Drug discovery

Oral Presentation

A MIRACULOUS NANOMEDICINE: NANOROBOTICS

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ABSTRACT

The recent advancement in the field of nanotechnology is the delivery of nanomedicine. The study of nanotechnology of creating machines or robots (nanorobots) by theoretical engineering near about nanometer (10-9 meters) is "nanorobotics". the names 'nanorobots', 'nanoids', 'nanites/nanomites' 'industrial robots', 'humanoid', 'surgical robots' have been used to describe these hypothetical devices. In this article focused on concept, design, advantages, disadvantages, application and future aspects on nanomedicine delivering agent nanorobots in different fields. the development of design of nanorobots has been done by using various approaches such as: biochip, nubots, positional nanoassembly, usage of bacteria etc. these are implemented by using several components such as sensors, actuators, control, power, communication and by interfacing cross-special scales between organic inorganic systems. due to specific site operation mechanism leads no any harmful activities and no side effects and non-immunogenic. The initial cost of design development is high but accurate delivery of medicine to target site is the boon to mankind. These nano devices are used for the purpose of maintaining and protecting the human body against pathogens in different areas (food, industry, agriculture, farming, space technology etc.). recently in nano era used for the treatment of cancer (in obese prostate cancer, colon cancer, kidney cancer etc.), cerebral aneurysm, removal of kidney stones, gene therapy, nanodentistry, diagnosis and testing, diamond nanotechnology for skin treatments, implementation of anti–HIV etc. various new developed nanotechnology based nanorobotic projects has been planned and proposed for future aspects in different fields of bio-medicines.

Keywords: Nanotechnology, Nanorobotics, Nanorobots, Nanomedicine

COMPARATIVE ANALYSIS OF THE *IN VITRO* ANTIOXIDANT POTENTIAL OF ETHANOLIC EXTRACTS OF *HYBANTHUS ENNEASPERMUS* LINN AND *BAUHINIA FOVEOLATA* DALZELL-TWO INDIGENOUS PLANTS OF THE WESTERN GHATS OF INDIA

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ABSTRACT

Plants sources are potentially rich reservoirs of bioactive phytoconstituents that have been useful to cure various ailments. Reactive oxygen species (ROS) or free radicals cause oxidative damage and can be a specific feature in pathogenesis of cancer, cardiovascular diseases, neurodegenerative disorders etc. The antioxidant activity of flavonoids, tannins and phenolic compounds is mainly due to their redox properties, which allows them to act as reducing agents, hydrogen donators and singlet oxygen quenchers. The phytochemical investigations of the ethanolic extract of *Hybanthus enneaspermus* Linn. (EEHE) and ethanolic extract of *Bauhinia foveolata* Dalzell (EEBF) revealed the presence of flavonoids, tannins, phenolic compounds, alkaloids, triterpenoids, carbohydrates etc. EEHE and EEBF were further subjected to *in vitro* antioxidant activity, which was assessed using three radicals like DPPH (2, 2-diphenyl-1-picrylhydrazyl), hydrogen peroxide and nitric oxide. Linear regression analysis was used to calculate IC_{50} values; minimum value indicates higher scavenging ability, hence better antioxidant activity. The free radical scavenging activities of EEHE and EEBF were compared against the standards, ascorbic acid for DPPH ($IC_{50=}$12.06µg/ml), gallic acid for hydrogen peroxide ($IC_{50=}$76.58µg/ml) and gallic acid for nitric oxide ($IC_{50=}$64.63µg/ml) assays. EEHE showed higher IC_{50} values, minimum observed by DPPH method ($IC_{50=}$ 451.6µg/ml) followed by hydrogen peroxide method (IC_{50}=622.7µg/ml) and then nitric oxide ($IC_{50\ =}$712.7 µg/ml) assays. In comparison to EEHE, EEBF showed least IC_{50} values, with significant scavenging activity observed by hydrogen peroxide (IC_{50}=43.96µg/ml) followed by DPPH ($IC_{50=}$19.04µg/ml) and then nitric oxide ($IC_{50\ =}$65.86µg/ml) assays with reference to the standards, thus exhibiting a higher antioxidant potential than EEHE.

Keywords: *Hybanthus enneaspermus* Linn, *Bauhinia foveolata* Dalzell, Ethanolic extract, Free radical scavenging, Antioxidant activity, $IC_{50,}$ DPPH (2,2-diphenyl-1-picrylhydrazyl), Hydrogen peroxide, Nitric oxide

A COMPARATIVE STUDY BETWEEN EFFICACY OF CYCLOSPORINE 0.1% AND REBAMIPIDE 2% EYE DROPS IN MODERATE TO SEVERE DRY EYE CASES

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ABSTRACT

Dry eye disease is one of the most common ocular surface diseases in India and worldwide; particularly in postmenopausal women and elderly. The prevalence based on OSDI (ocular surface disease index) was 29.25% as per a study conducted in April 2010. The early detection and timely management of dry eye is important to prevent long term sequelae and sight threatening complications. This is a prospective interventional longitudinal study which was conducted in the ophthalmology OPD of our institute after approval from ethical committee. Patients presenting to the OPD with signs and symptoms of dry eye disease were graded according to the DEGS (Dry Eye Grading Scheme). Their details were entered in case record form. We included 80 subjects in our study as per inclusion and exclusion criteria, of which 40 received cyclosporine and the other 40 received rebamipide eye drop randomly. Patients were followed at monthly intervals for 6 mo. All the values obtained were entered in master chart and data was analyzed. The two drugs were compared using three scores, Schirmer's test, TBUT (Tear break up time) and OSDI (ocular surface disease index). At the end of 6 mo, the P values were found to be statistically significant which are as follows: Schirmer's (P value<0.01), TBUT (P value 0.03) and OSDI (P value 0.03). Hence, from the results obtained, we conclude that, rebamipide has a better efficacy when compared to cyclosporine in moderate to severe dry eye cases.

Keywords: Rebamipide, Cyclosporine, OSDI, TBUT, Schirmer's, DEGS

ANTIHYPERLIPIDEMIC EFFECTS OF 7-METHOXY COUMARIN ON STREPTOZOTOCIN INDUCED CHANGES IN EXPERIMENTAL RATS

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ABSTRACT

Diabetes mellitus is a metabolic disorder and it has a very big challenge to worldwide public health. Number of studies have suggests that frequent hyperglycemia induced changes make severe metabolic complications. The effect of 7-methoxy coumarin treatment on circulatory and liver lipid profile was studied in streptozotocin (STZ) diabetic rats. In this study design diabetes was developed by intraperitoneal injection (i. p) of 40 mg/kg bw STZ in freshly prepared citrate buffer after on overnight fasting. 7-methoxy coumarin at a dose of 10, 20 and 40 mg/kg bw were administrated orally for 45 d to the confirmed diabetic rats. At the end of the study period diabetic rats shows the significant elevation in the levels of plasma glucose, plasma lipoproteins VLDL-C, LDL-C and tissue lipids like cholesterol, triglycerides, free fatty acids and phospholipids. 7-methoxy coumarin at a dose of 40 mg/kg bw treated rats shows significant reduction in the levels of plasma glucose and lipid profile and HDL-C with modulation of lipid metabolic enzymes. The findings demonstrate that 40 mg/kg bw of 7-methoxy coumarin exhibit more potential antihyperlipedaemic effect than the other tested doses.

Keywords: 7-methoxy coumarin, Streptozotocin, Diabetes, Lipid profile, Lipid metabolic enzymes

APPLICATION OF FACTORIAL DESIGN FOR VALIDATION OF HIGH-PERFORMANCE THIN LAYER CHROMATOGRAPHY METHOD FOR ROBUSTNESS DETERMINATION OF PHENOLIC ACIDS (GALLIC ACID, FERULIC ACID, CHLOROGENIC ACID AND CAFFEIC ACID) IN SELECTED INDIAN BAMBOO SPECIES

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ABSTRACT

Phenolic acids are a class of molecules an antioxidant agent which is used for the management of radio protectors, diabetes, etc. High-performance thin-layer chromatography (HPTLC) method for the analysis of class of phenolic acid was developed and validated as per ICH guidelines. Phenolic acids was chromatographed on silica gel 60 F_{254} TLC plates using toluene: ethyl acetate: formic acid: methanol (3:3:0.8:0.6 v/v/v/v) as a mobile phase. A compact spot for phenolic acids was observed with Rf (0.13±0.02, 0.57±0.03, 0.78±0.01, 0.87±0.01) when the densitometric scanning was implemented at 280 nm. The linear regression analysis data for the calibration plots showed r^2 = 0.99 with a concentration from (50-500 ng/band). 'Design of experiments' (DoE) employing 'factorial design' (FD) and 'response surface methodology' (RSM) studied to assess the variations in selected factors, particularly (developed distance, saturation time, mobile phase ratio, band size) as graphical interpretation for robustness. The statistical achieved with multiple-linear regression (MLR) and ANOVA. The method validated for precision, accuracy, detection limit and quantitation limit and robustness. The method successfully employed for the determination of selected Indian Bamboo-species.

Keywords: Phenolic acids, Factorial design, HPTLC, Validation, Bamboo-species

DROSPIRENONE INDUCED GALL BLADDER DISEASES: A RETROSPECTIVE STUDY OF EUDRAVIGILANCE DATABASE

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ABSTRACT

Various concerns have been raised in media as well as published reports for the association of drospirenone and gallbladder diseases. The objective of the study was to identify possible signal induced by drospirenone and its significance with gall bladder diseases by searching database from eudravigilance. A total of 42902 reports of patients till September 2018 were downloaded from eudravigilance website. These reports contained information of adverse events associated with all other drugs inclusive of drospirenone. Signal detection were determined by proportional reporting ratio (PRR), reporting odds ratio (ROR), PRR calculated by chi-square statistics, 95% confidence interval of PRR, observed to expected (O/E) ratio and De Mouchel method calculated PRR. Information component (IC) was given by Bayesian confidence propagation neural network. A total of 3823 reports of drospirenone induced gallbladder diseases were reported in eudravigilance database. The PRR was found to be 125.31 and by the Du Mouchel method it was 1.112. The PRR calculated by chi-square statistics was 904.22 (p-value<0.0001). The lower and upper limits of 95% CI of PRR was found to be 4.43 and 4.87, respectively. The O/E ratio was found to be 1.112 and ROR was found to be 40, also IC–2 SD is 0.12 indicating a significant weak signal associated with drospirenone and gall bladder diseases. Study shows a very low risk associated with drospirenone and gallbladder diseases. These data will enhance information available to healthcare professional and may found useful in management of women's health.

Keywords: Drospirenone, Gall bladder, Signal detection, Disproportionality analysis

MICROWAVE-ASSISTED SYNTHESIS AND EVALUATION OF SOME CHALCONE DERIVATIVES AS ANTI-OXIDANT AGENTS

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ABSTRACT

Compounds designed to delay or inhibit the oxidation processes, occurring under the influence of reactive oxygen species, reactive nitrogen species or atmospheric oxygen are identified as antioxidants. Chalcones have gained increasing attention by researchers owing to their varied pharmacological activities. The antioxidant activity of chalcones is due to the presence of phenolic–OH group attached to the ring structure. A microwave assisted one pot procedure was employed to synthesize eleven chalcone derivatives utilizing reaction between substituted benzaldehydes and substituted acetophenones. The identity of synthesized compounds was set by analysis of their IR, NMR and Mass spectra. The *in vitro* anti-oxidant activity of title compounds was evaluated by DPPH scavenging assay. The radical scavenging ability of synthesized compounds in an iron-free system was indicated by interaction of these compounds with the stable free radical DPPH. Among the synthesized compounds, the best DPPH radical scavenging ability was shown by 2',4'-dihydroxy-3-methoxy,4-hydroxy chalcone [AMD12 (50.74±0.33 µg/ml)], followed by 4'-amino-3-methoxy,4-hydroxy chalcone [AMD17 (52.38±0.02µg/ml)] and 2',5'-dihydroxy-4-isopropyl chalcone [AMD16(54.34±0.3µg/ml)]. DPPH radical scavenging assay revealed the importance of hydroxy group at 2' and 4'/5' position of ring A and 3-methoxy of ring B.

Keywords: Antioxidant, Chalcones, Microwave-assisted synthesis

SIMULTANEOUS ESTIMATION AND ANALYTICAL METHOD DEVELOPMENT, VALIDATION FOR THE TENELIGLIPTIN AND METFORMIN BY RP-UFLC

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ABSTRACT

The aim of the study is to develop analytical method for the simultaneous estimation of teneligliptin and metformin using RP-UFLC. A simple, sensitive and accurate method was developed for teneligliptin and metformin using the chromatographic conditions of C18 Phenomenex kinetex (250 mm×4.6 mm i.e., 5µm particle size) column in gradient elution mode with the mobile phase consisting of methanol, acetonitrile and potassium dihydrogen orthophosphate adjusted to pH 4.6 using orthophosphoric acid (40:20:40) with a flow rate of 1.0 ml/min, injection volume 10 µl and the eluent was detected at 250 nm using PDA and UV detector. The retention time of teneligliptin and metformin were found to be 5.2 min and 2.5 min respectively. The above method was validated with respect to system suitability, linearity, precision, limit of detection (LOD) and limit of quantification (LOQ), accuracy (recovery) and robustness according to ICH guidelines. The linearity of the above methods was found to be 2-10µg/ml for teneligliptin and 25-125µg/ml for metformin. Hence these methods can be used for routine analysis in quality control laboratories.

Keywords: RP-UFLC, Teneligliptin, Metformin, ICH guidelines

DESIGN AND EVALUATION OF RAMOSETRON HYDROCHLORIDE MOUTH DISSOLVING FILM

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ABSTRACT

Cancer patients on chemotherapy or radiation therapy suffer from nausea and vomiting as a side effect of treatment. Nausea and vomiting is a condition that is distressing and affects the quality of life. 5-HT_3 receptor antagonists are considered as gold standard for use in the management of emesis in cancer patients. Ramosetron hydrochloride is a tetra–hydro-benzimidazole derivative. It is a 5-HT_3 receptor antagonist that is selective and is structurally independent of its previous class of drugs. Cancer is a disease that can occur in any age group. Mouth dissolving film, offers convenience in the form of ease of administration to dysphagia patients, children and the elderly. The aim of the present study is to develop a mouth dissolving film of ramosetron HCl that would provide ease of administration and comfort to already distressed cancer patients on chemotherapy to treat emesis. Ramosetron HCl films were prepared using solvent casting technique. An experimental design of nine formulations was set up with two independent variables X1-polymer concentration, X2-plasticiser concentration at three levels. Design expert software 11.0 trial version was used for analysis of responses. The response was measured in terms of the dependent variables Y1-disintegration Time in seconds and Y2-drug release in percentage. The two way ANOVA and response surface plots, help to establish the effects of independent variables on dependent variables and obtain a optimized formulation.

Keywords: Ramosetron HCL, Oral film, 5-HT_3 antagonists emesis

NON-INVASIVE SCORING SYSTEMS FOR HEPATIC FIBROSIS IN USG DIAGNOSED NAFLD IN TYPE 2 DM

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ABSTRACT

Worldwide prevalence of NAFLD ranges from 6% to 33%. In India 61.3 million patients of T2 DM with estimated 25 million patients of NAFLD are at risk of further progression. USG has interobserver variability for grading of fatty liver but the fibrosis scoring system is specific predictor of fibrosis. 150 patients were selected History, detailed examination, anthropometric measurements, CBC, LFT were carried out in the study participants. NFS, BARD, APRI score were calculated and compared with each other in relation to the USG grading of NAFLD patients. This is an ongoing study, Initial results: 150 subjects with USG diagnosed (Grade 1/2) NAFLD were evaluated. APRI, NFS, BARD score predicted absence of fibrosis in 25%, 7%, 2% subjects respectively. Correlation of the 3 scores with each other showed significant correlations between the BARD and APRI scores (p=0.012) and BARD and NFS scores (p=0.023) and NFS and APRI scores (p=.000) which is explained on commonality of parameters. Association of the scores with the USG diagnosed grade of NAFLD showed strong, significant association with BARD scores ($\chi(3)=12.21$, p=.007; Phi =.618). Predictive possibility of fibrosis in NAFLD in DM subjects could vary depending on the scoring system used. Specificity and sensitivity of the different scoring systems may require to be redefined in the Indian population. The BARD score significantly associated with the USG grading of the subjects and may be recommended as being both predictive and convenient.

Keywords: NAFLD, APRI, NFS, BARD, Fibrosis

FABRICATION AND EVALUATION OF RITONAVIR CONTROLLED RELEASE TABLETS FOR EFFECTIVE ANTI-HIV THERAPY

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ABSTRACT

Ritonavir, a BCS class II drug, used in the treatment of HIV/AIDS. The drug has shorter biological half-life ($t_{½}$) of 3-5 h, thus requires multiple/frequent dosing, and found to be an ideal candidate for controlled release formulation. In the present investigation an attempt has been made to formulate controlled release tablets of ritonavir using HPMC as release retarding material by direct compression method. The excipients employed in the formulation did not alter the physicochemical properties of the drug as confirmed by the FTIR/DSC techniques. The tablets showed good mechanical properties in terms of hardness and friability. The release of the drug from the tablets was modulated by employing varying concentrations of polymer. Mathematical analysis of drug from the tablets exhibited non-fickian diffusion obeying zero order kinetics. *In vivo* pharmacokinetic study of the developed controlled release tablets of ritonavir exhibited prolonged T_{max}, $t_{½}$ and enhanced oral bioavailability.

Keywords: Ritonavir, Controlled release tablets, *In vitro* and *in vivo* studies

PRECLINICAL TOXICOLOGICAL EVALUATION (ACUTE, SUB ACUTE TOXICITY) OF STANDARDIZED PLANT EXTRACTS *SELAGINELLA BRYOPTERIS* ON WISTAR RATS

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ABSTRACT

In spite of the way that there was no antagonistic impact saw in past creature security investigations of extracts of *Selaginella bryopteris,* including intense and sub intense oral danger measure, regardless of whether *Selaginella bryopteris* is alright for long haul utilize stays obscure. Along these lines, the examination was directed further to clear up the palatable security of *Selaginella bryopteris* for long haul utilize. Forty Sprague-Dawley (SD) rats were isolated into four gatherings, each comprising of ten male and ten female rats. Rats were orally administrated with turnaround osmosis water (control) or 1,000 and 2,000 mg/kg b.w./d *Selaginella bryopteris* extricates for 18 and 28 successive days. Clinical perception of the rats was completed day by day. The body weight and encourage admission of the rats were recorded week by week. Toward the finish of the investigation, all rats were relinquished and the blood and organs were gathered for hematology, clinical natural chemistry and histopathological examination. During the study period, no abnormality occurred in clinical signs, body weight, and ophthalmological examination. There were no significant differences in urinalysis, hematology and clinical biochemistry parameters between the treatment and control group. Necropsy and histopathological examination showed no treatment-related change. According to the results, the no-observed-adverse-effect level (NOAEL) of *Selaginella bryopteris* extracts was greater than 2,000 mg/kg b.w./d in SD rats.

Keywords: Acute toxicity, Sub-acute toxicity, Hematology, Biochemical studies

ANTIGLYCATING BIO-ACTIVES AND PROBIOTICS SYNERGISTICALLYIMPROVES PRE-DIABETIC CONDITION

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ABSTRACT

Diabetes is spreading globally and yet its exact pathogenesis has not been well understood. Recent studies have shown that the gut microflora is associated with diabetes. In this work we tried to elucidate the relationship between gut microflora, its impacts on host physiology during the development of pre-diabetic state along with the impact of protein glycation on dominant microbes and a *vice-versa*. The experiments were done on male Wistar rats (n=4) and pre-diabetic state is achieved by feeding a high dose of fructose (10 gm/day) to control rats. Pre-probiotics were given to another group of rats along with same dose of fructose. The rats were kept under supervision and sacrificed at the end of experiment and immediately subjected to evaluate biochemical and microbial parameters. Using 16SrRNA sequencing phylogenetic tree was created for the most dominant isolated bacterial strains. The plant derived bio-actives were assessed for antibacterial potential and therefore their role in maintaining a healthy gut. We observed that high fructose feeding alters the gut flora, reduces the normal biota and this adverse change is probably promotinga progression of diabetes. It also accelerates the rate of protein glycation. Inhibitors of protein glycation like limonene, eugenol have shown antibacterial potential against the pathogenic strains isolated from the high fructose fed rats gut having higher levels of protein glycation. However, these bio-actives have minimal role in maintaining the healthy gut flora. Hence combination therapy of these bio-actives and probiotics is beneficial in regulating normal flora of intestine, restricting opportunistic pathogens, retarding the rate of protein glycation and managing pre-diabetic state.

Keywords: Glycation, Glycation inhibitors, Gut microbiota, Diabetes

DESIGN AND DEVELOPMENT OF ROBOTIC JAW FOR THE *IN VITRO* DISSOLUTION TESTING OF MEDICATED CHEWING GUM

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ABSTRACT

Chewing gum is an emerging alternative drug delivery system for oral and per oral route. It is gaining the popularity because of many advantages like fast absorption, bypass first pass effect and effective buccal drug administration for treating the local diseases. *In vitro* drug release study parameters and equipments for the conventional dosage form like tablets and capsules are very much established and referred in the official compendia. However, these equipments and methods are not suitable for studying the drug release from the chewing gum as it involves process of continuous mastication to release the active ingredients. In the present study, we have developed a simple, robust and economical robotic *in vitro* dissolution tester. Here, we described the design, working and testing parameter of the robotic jaw. To simulate the mastication process, upper and lower jaw was made by using tension adjustable impact plate equipped with crank shaft was designed. The PC interface was used to setup and simulate the parameters like chewing stoke pressure, frequency, temperature of salivary fluid. The impact plate crushes the chewing gum with pre-defined force and chewing frequency. The performance of robotic dissolution tester was evaluated using self formulated chlorhexidine gluconate chewing gum. The drug release from the chewing gum was found to be predictable and reproducible confirming the right designing and fabrication of the instrument. This developed robotic jaw can be used for *in vitro* drug release study of chewing gum dosage form.

Keywords: Chewing gum, *In vitro* dissolution testing, Robotic jaw, Mastication parameters

MECHANISM OF ACTION OF AYURVEDIC MEDICINE IN INHIBITION OF PRO INFLAMMATORY CYTOKINE PRODUCTION

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ABSTRACT

Chronic inflammation is characterized by production of pro inflammatory cytokines, tumour necrosis factor (TNF-α) and interleukin (IL-1β) by cells involved in inflammatory process particularly monocytes, macrophages and dendritic cells. Inhibition in production of TNF-α and IL-1β by lipopolysaccharide (LPS) stimulated monocytes/macrophages/dendritic cells represent an important model for screening of anti-inflammatory molecules. Ayurvedic medicines, *Guggulu thiktha gritham,* and *Yogaraj guggulu vatika*, which are used in ayurvedic form of medicine for treatment of various types of pathologic condition associated with chronic inflammation were evaluated for their ability to inhibit production of TNF-α and IL-1β by LPS stimulated monocytes/macrophages. THP-1 monocytic cell lines and THP-1 derived macrophages were used for the study. Cells were pre-incubated with different solvent fractions, prepared by fractionation of the ayurvedic medicine with different solvents, prior to treatment with LPS. Following incubation, levels of TNF-α and IL-1β secreted by cells into the media were analysed by ELISA. TNF-α and IL-1β levels were quantified and compared with positive control rolipram and dexamethasone. Bioactive molecules present in the most active fraction were determined by UPLC QToF/MS. Identified molecules were then docked with TNF-α convertase enzyme (TACE) and capase-1 which are involved in secretion of soluble TNF-α from membrane bound TNF-α and maturation of IL-1β respectively.

Keywords: *Guggulu thiktha gritham, Yogaraj guggulu vatika,* TNF-α, IL-1β, TNF-α convertase enzyme (Tace) and capase-1

DESIGN AND DEVELOPMENT OF TRANSGEL NANOFORMULATION FOR THE TREATMENT OF OSTEOPOROSIS

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ABSTRACT

Osteoporosis is a major bone disease affecting majority of male and female population of all age groups. According to osteoporosis society of India, approximately 50 million women were suffering from osteoporosis in the year 2015. RX which belongs to SERM class is a promising BCS class II drug used for the treatment of post-menopausal osteoporosis but has limited solubility (less than 0.25 mg/ml), undergoes hepatic metabolism and shows low bioavailability (2%). The objective of our work is to formulate nanoemulsion of RX and deliver by transdermal route. Our hypothesis is formulation of nanoemulsion will enhance the solubility of the drug and subsequently administration by non-oral route will favor improved bioavailability. The nanoemulsion was prepared by aqueous titration method using oil, surfactants and co-surfactants and optimized using central compost design on design expert software v.11. The final formulation was obtained with size 94 nm, PdI 0.204 and zeta potential-9.10 mV. The TEM image revealed spherical homogenous particles with size 120-140 nm. Further, DSC and XRD thermograms suggested conversion of drug from crystalline to amorphous forms. The *in vitro* dissolution studies carried out depicted enhanced dissolution of drug at pH 7.4 compared to plain drug suspension, suggesting enhanced solubility of RX. The nanogel was prepared using carbopol 934 for *in vitro* permeation study and revealed improved skin permeation through rat skin. Finally the *in vivo* studies necessary to establish the therapeutic efficacy of the formulation is still on-going.

Keywords: Osteoporosis, Nanoemulsion, Transdermal

COMPARATIVE STUDY OF HERBAL EXTRACT OF *PIPER NIGRUM, PIPER ALBUM* AND *PIPER LONGUM* ON VARIOUS CHARACTERISTICS OF ISONIAZID AND RIFAMPICIN MICROSPHERES

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ABSTRACT

Bioenhancers are the herbals used to enhance the 'bioavailability', they do not show any therapeutic effect, but when given along with other drugs in combination enhances the activity of drug molecule. In a cited research paper, the effect of various species of piper was used as bioenhancer singly and in combination in an equal ratio. The methods used for preparation of microspheres are complex coacervation and modified emulsion method. The prepared microspheres were evaluated for various parameters like *in vitro* release, drug entrapment efficiency, percent bioadhesion, permeability study using intestinal sac method. The *in vitro* drug release of drugs from formulations where *Piper nigrum* was used as bioenhancers was found to be about 66-70% in 12 h. when used singly. When bioenhancers used in combination the *in vitro* drug release of drugs was increased up to 85-90% for combination of *Piper album* and *Piper longum* in an equal proportion, the same was about 35-40% in case of formulations where no bioenhancers was used. The microspheres found to be less than 130 micron in size. The DEE was found to be in the range of 27-67%. The bioadhesion of the microsphere were found to be 20-76% (increased in formulations where bioenhancers incorporated). The *in vitro* release study by USP paddle apparatus, the important results from *in vitro* release study relates to the very significant enhancement in drug release, due to presence of bioenhancers.

Keywords: Microspheres, Bioenhancer, *Piper nigrum, Piper album, Piper longum*, Isoniazid, Rifampicin

A PROSPECTIVE OBSERVATIONAL STUDY ON DRUG UTILIZATION PATTERN IN MEDICAL INTENSIVE CARE UNIT OF A TERTIARY MEDICAL CARE HOSPITAL

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ABSTRACT

Drug utilization research is defined by WHO is the study of marketing distribution, prescription and use of drugs in a society with special emphasis on the resulting medical, social and economic consequences. Conducting periodic studies of pattern of drug use in hospital settings is therefore essential to critically analyse the current hospital drug policies. The objective was to generate data on the drug utilization pattern in Medical ICU and to monitor Antimicrobial usage. Source of data was case sheets of the patients who were admitted in MICU of Hassan institute of Medical Sciences for 3 mo. The demographic and clinical treatment data of patients was collected. The prescriptions were assessed as per the WHO indicators. Descriptive statistics was applied to infer the findings. Out of the 200 cases sheets that were evaluated, 137 of were males and 63 were females. The most common causes of admission were suicidal poisoning, snake bite, dengue fever, myocardial infarction and stroke. The average duration of stay was 5.74 d. The average number of drugs prescribed per patient was 5.26. Pantoprazole, atropine, pralidoxime, ASV, ondansetron, N-acetylcysteine and ceftriaxone were the most commonly prescribed drugs. 68% of the drugs were prescribed with their generic names.

Keywords: Drug utilization, Prescribed daily dose, Intensive care, WHO indicators

HOMOLOGY MODELING OF 14-ALPHA LANOSTEROL DEMETHYLASE

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ABSTRACT

In immuno-compromised patients the greatest risk is of microbial infection. In such patients, opportunistic microbes are more fatal as compared to the regular patients. Azoles have developed as antifungals with their mode of action as inhibition of the 14-alpha lanosterol demethylase in the fungi. The protein has been recognized in various species and identified. Homology modeling was performed to get the 3D-structre of the protein to serve as a virtual target for docking of the newly developed drug candidates and study their interactions. The FASTA sequence for lanosterol 14α-demethylase of *Candida albicans* gene was retrieved from the NCBI, template sequences were selected and alignment done using. The alignment gave 39% identities with 8% gaps. After the alignment, the actual model building was done which included loop modeling, side-chain modeling and model optimization was done. The model quality was assessed by checking their geometrical and physico-chemical parameters. The model validation was performed using PROCHECK and Ramachandran plot. Finally, the dockings of the ketoconazole was used to assess the usefulness of the binding site in linking structural features to pharmacological properties.

Keywords: 14-alpha lanosterol demethylase, Homology modeling, Antifungal azoles

CARDIOVASCULAR COMPLICATIONS IN STREPTOZOTOCIN INDUCED DIABETIC RATS AND POTENTIAL INFLUENCE OF BETA BLOCKERS

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ABSTRACT

To study the possible protective effects of beta blockers on myocardial injury in acute myocardial infarction in streptozotocin (STZ) induced diabetic rats. For the study, 30 male wistar rats were divided in 5 groups of six each (n=6). Diabetes was induced by intraperitoneal injection of streptozotocin (45 mg/kg). Myocardial infarction (MI) was induced by subcutaneous administration of isoproterenol (85 mg/kg, s. c.) for two consecutive days at an interval of 24 h. Rats were pretreated with metformin (50 mg/kg/day, IP), carvedilol (2 mg/kg/day, IP) and atenolol (10 mg/kg/day, IP) for a period of 30 d and isoproterenol (ISO) was injected on 29th and 30th day. After 24 h blood was collected through retro-orbital plexus for the estimation of troponin-I, along with recording of changes in body weight, heart and liver. Anti-oxidative enzymes such as superoxide dismutase, catalase and lipid peroxidase were also estimated. Histopathological studies of heart and liver were also performed. Administration of STZ in rats showed a significant ($p<0.001$) increase in the fasting blood glucose levels in all treatment groups compared to normal. Administration of carvedilol and atenolol significantly improved myocardial function against isoproterenol induced infarction compared to positive control animals. Carvedilol demonstrated absence of troponin I in 80% of animals compared to that of atenolol treated group. It can be concluded that the carvedilol reduced the necrosis and infarct size in the heart as comparable to atenolol. It also produced a promising effect on oxidative damage induced by isoproterenol myocardial infarction experimental animals.

Keywords: Carvedilol, Atenolol, Isoproterenol, Myocardial infarction

ADVANCES IN ORAL PROLONGED DELIVERY OF METFORMIN HCL USING NANOPARTICLES AS CARRIERS TO TREAT TYPE 2 DIABETES MELLITUS

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ABSTRACT

The advancement towards liquid oral prolonged drug delivery is demandable in geriatric patients as marketed liquid sustained dosage forms are not available, it seeks the development of suitable drug nanocarriers that can transmit a sufficient dose of the drug to disease. Taguchi design (Design Expert) was used to optimize the metformin HCl loaded nanoparticles following the ionic gelation method using chitosan and cross linking with sodium tripolyphosphate (TPP). Metformin HCl nanoparticles are achieved to improve the delivery of drugs and also to make it prolonged by delivering drug of small particle size showing an initial release of 38 % in 1 h, 65 % in 3 h followed by a slow release of 87 % upto 10 h in the GIT (as per the Indian Pharmacopoeial Standards) and further enters into the blood stream. Due to lesser particle size (126.5 nm) of nanoparticles, it shows a good and timed release pattern. The entrapment efficiency was found to be 92.30 % by the concentration of 400 mg of chitosan. Also it was observed the antidiabetic effect of metformin HCl loaded nanoparticles shows statistically significant reduction in blood glucose levels in Wistar rats upto 10 h. The area of nanocarrier systems including polymeric nanoparticles seems to be the most promising strategy and it is suggested that the metformin HCl nanoparticles fabricated in our study may provide a suitable alternative to traditional systems.

Keywords: Nanoparticles, Metformin HCL, Chitosan, Prolonged release, Ionic gelation

FORMULATION AND EVALUATION OF HYDRALAZINE HYDROCHLORIDE BUCCAL FILMS BY SOLVENT CASTING METHOD USING DIFFERENT POLYMERS FOR THE MANAGEMENT OF PREGNANCY INDUCED HYPERTENSION

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ABSTRACT

Eclampsia and pre-eclampsia (pregnancy induced hypertension) is an acute and life-threatening complication during pregnancy. Hydralazine hydrochloride is one of the drugs of choice in treating this condition. The purpose of the present research work was to formulate the buccal films by using different polymers and provide a suitable patient convenience dosage form to enhance the bioavailability, provide quick onset of action and improve therapeutic efficacy. Hydralazine hydrochloride buccal films were developed by solvent casting method. Formulation H2, P4, S8, was best fitted to the *in vitro* diffusion studies and zero order release was observed and showed superior quality based on stability reports.

Keywords: Buccal films, Hydralazine hydrochloride, HPMC, Sodium alginate, Pectin, *In vitro* diffusion studies, Zero order release

IMPACT OF CLINICAL PHARMACIST INTERVENTION ON HYPERTENSIVE WOMEN AND PATIENT OUTCOMES AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Hypertension is the leading risk factor in Indian women without concern to their status with respect to education, literacy and knowledge etc. Women's health issues deserve as much attention as men since women have different health impact than men. The aim of this study was to assess the impact of clinical pharmacist intervention in hypertensive women and patient outcomes. This prospective, interventional study was conducted at a tertiary care hospital after obtaining ethical committee clearance. According to JNC guidelines, blood pressure (BP) standards were obtained and the collected data were analyzed using descriptive statistics parameters. A total of 295 participants were completed their follow up. In the baseline, medication adherence and knowledge were assessed by using Morisky medication adherence scale (MMAS) and knowledge assessment. The mean age and SD was found to be 53.42±2.9. The BP measurement of P value in the final visit was 0.0007 and the reading after intervention group at the final visit was 73.7±17.6 in mmHg. The MMAS and knowledge assessment scores P values were 0.0005 and 0.0007 respectively. This study concluded that the impact of clinical pharmacist intervention can significantly increase their knowledge, blood pressure control and medication adherence in hypertensive women.

Keywords: Hypertension, Clinical pharmacist, Knowledge, Medication adherence

INHALABLE PULMONARY STRATEGY FOR EFFECTIVE DELIVERY OF SYNERGISTIC DRUG COMBINATION IN COMBATING TUBERCULOSIS

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ABSTRACT

Tuberculosis, a disease fuelled by poverty, overcrowding, and under nutrition, is a global barometer of depreciation. Targeting anti-tubercular therapeutics to alveolar macrophages using microparticle technology mainly targets to increase local concentrations of therapeutics and potentially reducing the frequency of dosing requirements. Levofloxacin (LFX), rifampicin (RIF) and ethambutol (ETH) combination shows synergism and formulating these three as a dry powder inhaler effectively contributes to combating MDR and XDR TB. Inhaled therapies offer a unique approach to the treatment of tuberculosis (TB) using a relevant target organ system as a route of administration. Microparticles prepared by spray drying technique with the application of Placket Burman design in optimizing spray drying conditions to study its effect on % yield, entrapment efficiency and particle size of the preparedformulation. The biodegradable polymer was certainly evaluated through morphological characterization, micromeritics study, drug-polymer compatibility study, moisture content determination, drug encapsulation study, *In vitro* lung deposition and *in vitro* drug release study. Further, the work was extended by performing *in vitro* validation of novel device designed for DPI delivery to rodents, with the same microparticles to determine its fluidization property and uptake behavior by the rodents, which will further be helpful for the *in vivo* study. *In vitro* validation was also optimized for exposure time and dosage using the design of experiment as QbD is a best key to build quality in a product or a process.

Keywords: Tuberculosis, Dry powder inhaler, Levofloxacin (LFX), Rifampicin (RIF), Ethambutol (ETH), Spray drying

KOKILAKSHAM KASHAYAM, AN AYURVEDIC HERBAL PREPARATION IS AN INHIBITOR OF PRO-INFLAMMATORY CYTOKINES AND NO IN THP 1 DERIVED MACROPHAGES

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ABSTRACT

Chronic inflammation is a hallmark of several pathological conditions like rheumatoid arthritis, gastritis, atherosclerosis and cancer. A wide variety of anti-inflammatory chemicals have been developed to combat such diseases while presenting high toxicity and numerous side effects. Here, we report the anti-inflammatory effect of a non-toxic herbal decoction *Kokilaksham kashayam*, described in the classical text of Ayurveda-*Ashtamga hrudayam* used traditionally for the treatment of rheumatoid arthritis. It is a formulated herbal preparation composed of *Hygrophila auriculata*, which belongs to the Astercantha family. The phytochemicals present in the kashayam contribute to its pharmacological property, whereby they can act as effective managers of condition like oxidative stress. In this study, the kashayam was subjected to a sequential extraction procedure in order to separate the bioactive components into solvents of different polarity. Further, the extracts obtained after lyophilisation were tested for their efficacy in the inhibition of NO, pro inflammatory cytokines TNF-α and IL-1β. Lipopolysachharide (LPS) treatment of human THP-1-derived macrophages induced the secretion of high levels of the pro-inflammatory cytokines such as TNF-α and IL-1β, which was inhibited by the extracts obtained from *Kokilaksham kashayam* in a dose-dependent manner. The results were further studied using RT-PCR in order to compare the anti inflammatory properties of the different extracts obtained from *Kokilaksham kashayam*. Overall, our data indicates that extracts of the herbal decoction possess a potent anti-inflammatory effect and is a scientific validation that may prove it to be beneficial to prevent and improve the treatment of Rheumatoid Arthritis.

Keywords: *Kokilaksham kashayam*, THP-1 derived macrophages, Pro-inflammatory cytokines

STEM CELLS AS A NOVEL TOOL FOR WOUND MANAGEMENT IN DIABETIC ULCER – A SYSTEMATIC REVIEW

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ABSTRACT

Diabetic foot ulcers (DFUs) are a significant and rapidly growing complication of diabetes and its effects on wound healing. Over half of diabetic patients who develop a single ulcer will subsequently develop another ulcer of which the majority will become chronic nonhealing ulcers. One-third will progress to lower extremity amputation. Over the past decade, the outcomes for patients with DFUs ulcers have not improved, despite advances in wound care. Successful treatment of diabetic foot ulcers is hindered by the lack of targeted therapy that hones in on the healing processes dysregulated by diabetes. Stem cells are a promising treatment for DFUs as they are capable of targeting, as well as bypassing, the underlying abnormal healing mechanisms and deranged cell signaling in diabetic wounds and promote healing. This review will focus on existing stem cell technologies and their application in the treatment of DFUs.

Keywords: Diabetic foot ulcers, Stem cells, Wound healing

MODULATORY EFFECT OF HESPERIDIN ON HUMORAL AND CELL MEDIATED IMMUNITY

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ABSTRACT

The immunomodulatory agents of plant origins have appealed to induce para-immunity, the non-specific immunomodulation of essential granulocyte, macrophage, natural killer cells and complement function. It is now well documented that immunomodulatory therapy could prove to be an alternative to conventional chemotherapy for a variety of disease conditions. Previous studies suggested that hesperidin exhibits significant anti-tumor, antiviral, anti-inflammatory, and anti-allergic properties; the molecular mechanisms of their biological responses remain to be delineated. The present study examines the effect of hesperidin on the regulation of the immune response in experimental animal models. *In silico* docking studies on interleukins and TNF-α revealed inhibitory effect followed by cell line studies on murine macrophages. The effect of hesperidin of cellular immunity was determined by delayed-type hypersensitivity (DTH) response, carbon clearance assay, leukocyte mobilization test, and cyclophosphamide-induced myelosuppression, whereas humoral immunity was analyzed by the hemagglutination antibody (HA) titer assay. The docking studies demonstrated that hesperidin has high affinity for interleukins, NOS and TNF-α. *In vitro* studies also confirmed docking results. Further, hesperidin (25, 50 and 100 mg/kg, p. o.) evoked a significant increase in antibody titer in the hemagglutination test, increased immunoglobulin levels, and enhanced the delayed type hypersensitivity reaction induced by sheep red blood cells. It also significantly restored the leukocyte count in cyclophosphamide treated rats and augmented phagocytic index in the carbon clearance assay. The outcomes from the present study indicate that hesperidin possesses sufficient potential for increasing immune activity by cellular and humoral mediated mechanisms.

Keywords: Hesperidin, Immunity, Immunoglobulin, Cytokines

KNOWLEDGE, ATTITUDE AND PERCEPTION OFTHE MISUSE AND ABUSE OF OVER THE COUNTER (OTC) MEDICINES AMONG THE STUDENTS OF MANAGEMENT AND SCIENCE UNIVERSITY (MSU)

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ABSTRACT

Over-the-counter (OTC) medications are the drugs available to consumers without a prescription and it may be defined as safe and effective for use by the general public without a doctor's prescription. When a patient take a drug for purposes for which it was not intended is called misuse. The aim of this research is to study about knowledge, attitude and perception on over the counter (OTC) medicine misuse and abuse among the students of Management and Science University. A cross-sectional study was conducted to evaluate the level of knowledge, attitude and perception among MSU students. Primary data was collected using self-administered questionnaire consisting of socio-demographic questions for section 1, the knowledge questions for section 2, perception questions for section 3, attitude questions for section 4 and frequency of OTC products stocking for section 5. A total of 100 students participated in the study. Data was entered on SPSS version 23. Hundred students of Management and Science University (MSU) were participated in this study with most of the students are female (70%), age between 18 to 24 y old (80%) and non-medical cluster background (53%). The students has the highest knowledge (60.29±24.16) followed by attitude (67.73±8.19) and perception (59.43±8.41). There is no significant different in the score of knowledge, attitude and perception between male and female students ($p>0.05$). However, the scores were significantly higher among medical cluster students with a mean of 75.08±21.78, 70.49±8.23 and 63.03±7.96 respectively as compared to non-medical (47.17±17.89, 65.28±7.40, 56.23±7.51), $p>0.05$. The knowledge, perception and attitude were influenced by the socio-demographic factor such as academic background. Students from medical cluster have higher knowledge and attitude towards OTC misuse and abuse compared to non-medical cluster students.

Keywords: Knowledge, Attitude, Over-the Counter (OTC), Misuse, MSU

MANNOSYLATED MULTIWALLED CARBON NANOTUBES ASSISTED ARTESUNATE DELIVERY FOR CEREBRAL MALARIA

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ABSTRACT

Cerebral malaria (CM) is a severe complication of *Plasmodium falciparum* infection. The present investigation focuses on the novel approach using mannosylated multi-walled carbon nanotubes (M-MWCNTs) loaded with anti-malarial drug artesunate (AS) for site-specific delivery to brain cells. The procured MWCNTs were subjected to purification by selective oxidation method. Purified MWCNTs were then exposed to sequential chemical functionalization according to the following steps. carboxylation, acylation, amine modification, and finally, D-mannose conjugation. The modification of AS bearing M-MWCNTs (AS-M-MWCNTs) was examined by elemental analysis, Fourier transform–infrared spectroscopy, TEM and zeta potential measurements, percentage drug entrapment efficiency and *in vitro* drug release. Bio distribution study was performed on Albino rat for quantitative measurement of AS in different organs and blood. The percent drug entrapment of AS-M-MWCNT was found to be 80.29±3.4 %. *In vitro* AS release from AS-M-MWCNTs was found in a controlled manner at pH 7.4. The bio distribution studies clearly indicate the superiority of the AS-M-MWCNTs, as compared to the plain drug towards increasing the accumulation of AS in brain. The results suggest that AS-M-MWCNTs could be employed as an efficient nano-carrier for antimalarial therapy in cerebral malaria.

Keywords: Carbon Nanotubes, Cerebral malaria, Artesunate

GLUCOSE METABOLISM AND CYCLOOXYGENASE ACTIVITY IN BRAIN OF STZ INDUCED DIABETIC RATS TREATED WITH CURCUMIN

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ABSTRACT

The objective of this research was to study the glucose metabolism and cyclooxygenase metabolism in brain of rats and amelioration of curcumin treatment. This study reports the effect of curcumin (200 mg/kg per body wt.,/day) on polyol pathway, pentose pathway, Cyclooxygenase metabolism and histological alterations in hippocampus and cerebral cortex of rat with STZ induced diabetes for 3 w. Metformin (150 mg/kg body weight) was used as standard reference drug. The activities of aldose reductase (AR); sorbitol dehydrogenase (SD) cyclooxygenase (COX),PG peroxidase were increased whereas the activities of the glucose 6-phosphate and Na^+K^+ATPase activity were decreased, and glucose and sorbitol content were increased in diabetic rat brain. The significant decrease AR and SD with curcumin treatments shows its protection against diabetic complications. Decreased COX and PG peroxidase suggests its protections against inflammation. STZ-induced brain damage in the cortex and regions within the hippocampus was seen but histological alterations induced by diabetes in brain were restored with curcumin treatment. These results suggest that curcumin exerts, efficiently, an attenuating effect on the progression of hyperglycemia and also some hyperglycemia-induced complications in rat brain, when compared to metformin.

Keywords: Diabetic rat brain, Glucose, Hippocampus, Cerebral cortex, Cyclooxygenase, PG peroxidises aldose reductase

DEVELOPMENT OF DRUG AND SIRNA LOADED SURFACE MODIFIED CHITOSAN NANOPARTICLE FOR TREATMENT OF COLORECTAL CANCER"

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ABSTRACT

Colorectal cancer is the third most common cancer in the world. Current treatment includes surgery, chemotherapy, and radiotherapy. But, off-target delivery of anticancer drugs shows toxicity to the healthy tissues that lead to severe side effects. Cancer cells shows resistance to anticancer drugs due to gradually acquired multi drug resistance. Small interfering RNA therapeutics has potential advantages over traditional drugs. In RNAi process, 20–25 base pairs of siRNA introduce in cells results in the degradation of homologous mRNA and specific protein knock-down. There are two major challenges for siRNA therapy-(1) siRNA has a short plasma half-life *in vivo* because of degradation by serum nucleases, resulting in low bioavailability (2) Delivery to the target site and cellular uptake. To overcome these problems we use surface modified chitosan nanoparticles encapsulated siRNA and 5-FU drug. Aim of this study was preparation of surface modified chitosan nanoparticles loaded with 5-FU and VEGF sequence targeting siRNA, to evaluate *in vitro* release profile and to study cell cytotoxicity and cellular uptake on HT-29/HCT-116 cell line. Chitosan nanoparticles synthesized by ionic gelation method with particle size ranging from 150-200 nm which shows 75% drug entrapment efficiency and controlled, sustained release of drug.

Keywords: Multi drug resistance, siRNA-small interfering RNA, RNAi-RNA interference, VEGF-vascular endothelial growth factor

ANTIHYPERALGESIC AND ANTI-INFLAMMATORY EFFECTS OF TELMISARTAN AGAINST CHRONIC CONSTRICTION INJURY INDUCED NEUROPATHIC PAIN IN RATS

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ABSTRACT

Present study was designed to investigate the neuroprotective effects of telmisartan, an angiotensin II receptor antagonist, in chronic constriction injury (CCI) induced neuropathic pain in a rat model. Male sprague dawley rats (200-220g b. wt) were divided into four groups (6 in each) viz sham operated, vehicle treated CCI rats, telmisartan (5 and 10 mg/kg, b. wt) treated CCI-rats. Experimental animals were subjected to left common sciatic nerve ligation. Paw withdrawal threshold (mechanical allodynia) and latency (thermal hyperalgesia) were measured before surgery and at different time intervals following surgery. mRNA expression of TNFα and IFNγ, neuropeptide Y (NPY) and nerve growth factor (NGF) were studied in ligated sciatic nerves of rats. Histopathological examination of sciatic nerves using hematoxylin and eosin stain was also carried out. Treatment with telmisartan (5 and 10 mg/kg, b. w) produced a dose dependant and significant increase in mechanical allodynia threshold and decrease in thermal hyperalgesia latency in CCI rats. A significant down-regulation on TNFα and IFNγ and up-regulation of NPY and NGF were observed with telmisartan treatment. Telmisartan (5 and 10 mg/kg, b. wt) treated CCI-rats exhibited normal sciatic nerve architecture with moderate to mild schwann cell hyperplasia and endoneurial inflammatory infiltrates that were significantly lesser in severity when compared to vehicle treated CCI rats. The present study evidences on the protective effects of telmisartan against CCI induced neuropathic pain in a rat model. Further investigation on the molecular mechanism may repurpose the use of telmisartan in the management of neuropathic pain.

Keywords: Telmisartan, Neuropathic pain, Chronic constriction injury, TNFα, IFNγ, NPY, NGF

MAGNETIC MICROSPHERES A NOVEL DELIVERY SYSTEM

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ABSTRACT

Achievements have been made in management of diseases through invention of drugs over the past decade, which are fulfilling the challenge of modern drug therapy i.e. optimization of the pharmacological action of the drugs coupled with the reduction of their toxic side effects *in vivo*. Recently a lot of interest has been shown in targeted drug delivery system magnetic microspheres being one of them. Targeting by magnetic microspheres i.e. incorporation of magnetic particles into drug carriers (polymers) and using an externally applied magnetic field is one way to physically direct this magnetic drug carriers to the desired site. Widder *et al.*, first reported on the use of magnetic albumin microspheres. Morimoto, Widder and Senyei extensively reviewed their preparation and drug release properties. Magnetic microspheres are supramolecular particles that are small enough to circulate through capillaries without producing embolic occlusion but are sufficiently susceptible to be captured in micro vessels and dragged into the adjacent tissue by applying a magnetic field of 0.5-0.8 Tesla. Magnetic drug delivery by particulate carriers is efficient method of delivering a drug to a localized disease site. Very high concentration of the therapeutic agents can be achieved near the target site without any toxic effects to normal surrounding tissues or to the whole body. In magnetic targeting a drug is bound to a magnetic compound, injected into patient's blood stream and stopped with a powerful magnetic field in the target area. Depending upon the type of drug it is then slowly released from the magnetic carriers and confers a local effect. It is thus possible to replace large amounts of drug targeted magnetically to localized disease sites reaching effective and up to several folds increased localized drug levels.

Keywords: Magnetic, Microsphere, Targeting

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION STUDIES FOR THE ESTIMATION OF GEMCITABINE HYDROCHLORIDE IN THE DEVELOPED NIOSOMES

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ABSTRACT

Cancer is defined as an uncontrolled growth of abnormal cells and is a worldwide public health problem. Despite considerable progress in its early diagnosis and treatment, successful remedy is alarmingly negligible. Sustained and targeted delivery of anti-cancer agents at the site of action is desired to maximize the killing effect during the tumor growth phase and avoiding the exposure to surrounding healthy cells for reducing the toxicity. Conventional oral and injectable dosage forms of anti-cancer drugs are not able to do this due to short biological half-life, narrow therapeutic index, poor oral bioavailability and formulation difficulties like poor water solubility, stability and high molecular weight. Niosomes or non-ionic surfactant vesicles are microscopic lamellar structures similar to liposome formed on admixture of non-ionic surfactant and cholesterol with subsequent hydration in aqueous media. Due to presence of hydrophilic, amphiphilic and lipophilic moieties in the structure, these can accommodate drug molecules with a wide range of solubility. The therapeutic performance of the drug molecules is improved by delayed clearance from the circulation, protecting the drug from biological environment and restricting its effects to target cells. They act as a depot, releasing the drug in a controlled manner. Gemcitabine hydrochloride was successfully formulated as niosomes using thin film hydration method. A simple, rapid, accurate and robust HPLC method was developed for the analysis of Gemcitabine hydrochloride in the formulated niosomes. Developed niosomes were evaluated for biological activity (anti-cancer) on cell lines (MCF-7, A-549, MIA-PA-CA-2).

Keywords: Niosomes, Bioavailability, Gemcitabine hydrochloride, MCF-7, A-549, MIA-PA-CA-2

PHARMACISTS' PERCEPTION ON ELECTRONIC CIGARETTES: A QUANTITATIVE STUDY OF THE COMMUNITY PHARMACIES IN SELANGOR

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ABSTRACT

Electronic cigarettes, a battery powered device mimicking conventional cigarette is used widely by Malaysians. E-cigarette was created as an alternative for traditional cigarette, but its' safety and efficacy profile is still unclear to date. Pharmacists with lacking of information on safety and effectiveness of e-cigarettes, may experience hard time counselling patient or customer. Therefore in this study, pharmacists' knowledge, attitude and perception of e-cigarette is determined, with the total response rate of 62% (n=62), Respondents were chosen randomly by visiting community pharmacies around Selangor. Majority of the respondents (98%) are aware of e-cigarettes, and believed that reported use of e-cigarettes has increased for the past five years (73%). As for their perception of e-cigarette use among Malaysians, pharmacists ranked "to help quit smoking conventional cigarette" (44%) and "to be used socially or recreationally" (44%) as equally important. Most of the participants agreed that campaign should be conducted to create awareness on the pros and cons of e-cigarettes (45%), thus agreed to volunteer themselves to participate in the awareness campaign (68%). As for the effectiveness of e-cigarettes, majority of ranked it as totally ineffective (39%). While for the safety of e-cigarettes, majority of pharmacists disagreed that e-cigarettes are safe to inhale (55%), and that it does not cause any adverse effect (65%). Pharmacists indicated that it is important for patients on e-cigarettes to have counselling (76%). Pharmacists would definitely benefit from further information provided on e-cigarettes and further steps need to be taken for better information dissemination.

Keywords: E-Cigarettes, Pharmacists, Perception, Safety and effectiveness

DEVELOPMENT OF A PROCEDURE FOR PERSONNEL QUALIFICATION BY UV-VIS SPECTROPHOTOMETRY

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ABSTRACT

As personnel conducting analytical tests introduce variation into measurement results, their competency should be assessed, which can be done by performing an internal professional testing scheme with predefined acceptance criteria. However, to the best of our knowledge, there are no specific procedures and criteria that rest on normal analytical practice to assess the competence of analysts, only general approaches as elements of a quality system. Absorption spectrophotometry in the UV-Vis region is one of the main methods for quantitative determinations used in pharmaceutical analyses, applying which an analyst can considerably influence the correctness of measurement results due to complex sample preparation (successive dilutions by a volumetric method using both measuring flasks and pipettes). Therefore, development of a scientifically sound personnel testing procedure by UV-Vis spectrophotometry is an issue of current importance. We offer a procedure based on the quantitative determination of paracetamol as a testing item for testing personnel by UV-Vis spectrophotometry. The procedure includes typical sample preparation operations (taking test portions, using volumetric flasks, taking aliquots with pipettes) and performance of measurements on a spectrophotometer. We propose criteria for assessing personnel qualification based on the recommendations of the State Pharmacopoeia of Ukraine (SPhU) for normal analytical practice. We carried out a prognosis of the uncertainty of analytical operations for the proposed procedure according to the SPhU approach. The procedure has been tested and put into laboratory practice of Ukrainian Scientific Pharmacopoeial Center for Quality of Medicines and quality control laboratories of eight pharmaceutical companies of Ukraine.

Keywords: Personnel qualification, Internal professional testing scheme, Acceptance criteria, Visible absorption spectrophotometry, Normal analytical practice, Uncertainty of measurement results, State Pharmacopoeia of Ukraine

CYTOTOXIC EFFECT ON CANCEROUS CELL LINES BY BIOLOGICALLY SYNTHESIZED SILVER NANOPARTICLES OF *APHANAMIXIS POLYSTACHYA*

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ABSTRACT

Over the past few decades, nanoparticles of noble metals such as silver exhibited distinct physical, chemical and biological properties. Biologically synthesized and characterised silver nanoparticles of *Aphanamixis polystachya* were used in the study. In the present study, Caspase 9 and Caspase 7 activity was determined to measure the apoptosis initiation and execution of apoptosis. From the study, in case of Caspase 7, it was observed that treatment with silver nanoparticles of *Aphanamixis polystachya* produced a significant increase of 41.2% when compared with untreated control samples suggesting execution of apoptosis. In case of Caspase 9, there was 57.6% increase in Caspase levels when compared with untreated samples confirming initiation of apoptosis. BcL 2 protein regarded as anti apoptotic proteins prevents cells from undergoing apoptosis and is found over expressed in almost all malignant cells. mRNA expression analysis was used to determine the effect of silver nanoparticles of *Aphanamixis polystachya* on expression of Bcl2 mRNA. From the results it can be observed that presence of the silver nanoparticles of *Aphanamixis polystachya* produced a significant decrease in Bcl2 expression (approximately 5.7 fold change) when compared with untreated control. The decrease in BcL2 can be attributed as the major mechanism of apoptosis contributed by the silver nanoparticles. Signal transducer and activator of transcription 3 (STAT3) is persistently activated in a wide variety of cancer and treatment with the silver nanoparticles of *Aphanamixis polystachya* produced a considerable decrease in STAT3 suggesting a mechanism contributing to Go/G1 phase arrest. The present studies suggest that these nanoparticles could be a new potential against cytotoxic cells. However, it necessitates clinical studies to ascertain their potential as anticancer agents.

Keywords: Silver nanoparticles, *Aphanamixis polystachya*, Caspase activity, Apoptosis

THERAPEUTIC INVESTIGATION OF BAICALIN FLAVONOID IN FOUR VESSELS OCCLUSION INDUCED VASCULAR DEMENTIA IN RATS

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ABSTRACT

Vascular dementia (VaD) is one of the progressive neurovascular disorders. The pathogenesis of VaD is due to the lack of blood flow; inflammation; activation of neuroimmune cells; and neurodegenerative process. In the present study, VaD was induced by four vessels of occlusion (4VO: 2 carotid and 2 vertebral arteries) in rats. The baicalin flavonoid (BF 9 and 18 mg/kg; p. o.) was administered for 5 consecutive days. The reference control i.e., donepezil (10 mg/kg) was also administered for 5 consecutive days. The sign of 4VO induced VaD i.e., learning and memory levels were evaluated with different neurocognitive tests like Morris water maze (MWM) test. In addition, the 4VO induced biochemical changes such as acetylcholinesterase (AChE) activityandhomocysteine (HCy) levels in brain samples; and HCy levels in plasma were assessed. The BF found to possess the ameliorative effect in 4VO induced VaD along with alterations of biochemical changes. The similar effect is observed in reference control i.e., donepezil treated group. Therefore, BF may act as newer herbal candidate for the neurovascular disorders like VaD viz potential anti-oxidation; anti-lipidperoxidation; anti-inflammatory; regulation of cholinergic neurotransmission; and reduction of metabolic toxin mediated actions.

Keywords: Baicalin, Cerebral hypoperfusion, Four vessel occlusion, Homocysteine, Vascular dementia, Vertebral artery

STATISTICAL OPTIMISATION AND FABRICATION OF BILAYER TABLET IN THE MANAGEMENT OF PULMONARY ARTERIAL HYPERTENSION: DEVELOPMENT AND CHARACTERIZATION

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ABSTRACT

Pulmonary arterial hypertension (PAH) means high blood pressure in the lungs caused by obstruction in the small arteries of the lungs. It is a severe disease with a complex pathogenesis, for which combination therapy is an attractive option. Studies have assessed the impact of combination therapy of bosentan and sildenafilon both short-term responses and long-term outcomes. The favorable short-term haemodynamic results and good survival rates, observed in patients receiving both bosentan and sildenafil, supports the use of combination therapy in patients failing on monotherapy. The current study involves the fabrication of oral bilayer matrix designs of combination of two drugs-bosentan monohydrate, a dual endothelin receptor antagonistwith a half-life of 5h as sustained releaselayer and sildenafil citratean orally active, potent and selective inhibitor of phosphodiesterase type 5 (PDE5) producing a selective reduction in pulmonary artery pressureas immediate release layer; the optimisation of their *in vitro* release and characterisation using the Design expert software. Methocel K4M Premium DC2, a directly compressible HPMC grade has been used as the sustained release polymer. Pregeltinised starch is used as a diluent and release modifier and Sodium Lauryl Sulphate (SLS) as a solubiliser. The further objective is to assess the influence of the above variables on drug release of Bosentan using a 2^3factorial design. Responses are measured as drug release at 2h (Q2), 6h (Q6) and 10h (Q10). Contour and surface response plots of responses show significant interaction among the formulation variables thus aiding in optimization of bilayer tablet.

Keywords: Pulmonary arterial hypertension, lungs, Bosentan, Sildenafilon

DEVELOPMENT AND EVALUATION OF MUCOADHESIVE BUCCAL TABLET OF NEBIVOLOL HCL

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ABSTRACT

The purpose of this study was to design and optimize an oral controlled release nebivolol HCL mucoadhesive tablet, in term of its drug release and mucoadhesive strength. A 3^2full factorial design was employed to study the effect of independent variables like xanthan gum and carbopol 940 which significantly influence characteristics like swelling index, *ex-vivo* mucoadhesive strength and *in vitro* drug release. Tablets were prepared by direct compression and evaluated for mucoadhesive strength and *in vitro* dissolution parameters. In all the nine formulations studied, the exponent (n) varied between 0.5642 and 0.6214, showing non fickian release behavior corresponding to the coupled diffusion or erosion, resulting in a controlled and complete drug release up to 12 h. The results of drug permeation through bovine buccal mucosa reveal that drug was released more from buccal tablet formulations than marketed tablet through buccal mucosa over a period of 12 hr. *In vivo* bioavailability study was performed on rabbits for the optimized formulation NXC F5 and *in vitro* drug permeation to compare the pharmacokinetics of Nebivolol HCl with marketed tablet. Pharmacokinetic data approximately indicate that bioavailability of buccal tablets was found to be more compared to oral conventional marketed tablet of Nebivolol HCl. Stability studies revealed that there is no significant changes in the drug content, mucoadhesive strength and *in vitro* drug release parameters for a period of 6 mo.

Keywords: Nebivolol HCL, *In vivo*, Mucoadhesive tablet, Xanthan gum, Carbopol 940

FORMULATION AND EVALUATION OF OINTMENT CONTAINING SUNFLOWER WAX

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ABSTRACT

Waxes have been used in many cosmetic and pharmaceutical preparations as formulation aids. Sunflower was is a vegetable wax obtained from the winterization of sunflower oil. Present investigation has been aimed to explore the possible utility of sunflower wax in ointment base compared to standard base. The sunflower wax obtained, and its physicochemical characteristics were determined. Ointment base acts as a carrier for medicaments. The ointment base composition determines not only the extent of penetration but also controls the transfer of medicaments from the base to the body tissues. Sunflower wax base was compared with standard base for appearance, strength, spreadability, water number, wash ability and diffusibility. The results show that sunflower wax can be used successfully in ointment base. It helps to thicken the formulation by providing a rigid structural network of wax crystals, improving oil binding, texture, strength, emoliency and lubricity.

Keywords: Sunflower wax, Ointment, *In vitro* evaluation, Ointment base, Pharmaceutical aid

A SURVEY ON THE KNOWLEDGE, ATTITUDE, PERCEPTIONS AND PRACTICES RELATED TO ANTIBIOTIC USE AND RESISTANCE IN THE POSTGRADUATE STUDENTS IN TERTIARY CARE CENTER/HOSPITAL.

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ABSTRACT

Antibiotics are frequently used in clinical practice. The antibiotic-resistant bacterium due to unthoughtful and indiscriminate use of antibiotic is a major issue which is affecting healthcare delivery throughout the world. Available literature highlights the necessity of rationalization of antimicrobial therapy in developing countries. A cross sectional questionnaire based study was conducted after the approval from Institutional ethics committee over the time of one month at ABVRH Sawangi (Meghe) Wardha. A structured questionnaire was prepared and validated by the experts, which consisted of three parts. They included questions regarding knowledge, attitude and practice of post graduate students about antibiotic use and resistance prescribed in there hospital. Post graduate students of all three years working in ABVRH. Each post graduate student was explained the objectives of the study and their willingness to participate in the study were obtained. After the briefing, questionnaire was distributed and the students were asked to respond to the questions completely and anonymously. Completed responses were collected for analysis. Medical education should include strategies to change the attitude and practices apart from raising knowledge for improved patient outcomes. Medical professionals should be tailored with a sense of responsibility that, as prescribers, their responsibility pertains not only to the patients benefit and wellbeing but also to the society at large.

Keywords: Antibiotics, Antibiotic-resistant bacterium, Antimicrobial therapy

FORMULATION AND EVALUATION OF ALOE VERA BASED HYDROGEL FOR TREATMENT OF BURNS

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ABSTRACT

Mupirocin is an antibacterial drug, has been used in the treatment of wounds, topical infection. This study was conducted to develop a hydrogel formulation of mupirocin using two types of gelling agents xanthan gum and gelatin. The gels were evaluated for physical appearance, rheological behavior, drug release and stability. The drug release from all gelling agents through an egg membrane was evaluated using Franz diffusion cell. All gels showed acceptable physical properties concerning color, homogeneity, consistency, spreadability and pH value. Among all the gel formulations, F9 showed superior drug release. Stability studies showed that the physical appearance, rheological properties, and drug release remained unchanged upon storage for two months at ambient conditions.

Keywords: Mupirocin topical hydrogel, Xanthan gum, Gelatin, Drug release

PREVALENCE OF ESBL AND NON-ESBL ENCODING GENES IN *ACINETOBACTER BAUMANNII* STRAINS ISOLATED FROM PATIENTS OF DIABETIC FOOT ULCER INFECTION

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ABSTRACT

Foot ulcers are one of the main complications of diabetes mellitus. Extended-spectrum beta-lactamase (ESBL) producing *Acinetobacter baumannii* isolates are reported as important causative agents of infection. The aim of this study was to determine the prevalence of ESBL and non-ESBL producers encoding genes among *A. baumannii* isolates among diabetic foot ulcer patients. This is prospective study, 70 *A. baumannii* strains were isolated from inpatients and outpatients of general surgery wards of yenepoya medical college hospital, Mangalore, Karnataka, India in 1 y and six months. Antimicrobial susceptibility pattern by Kirby-Bauer and phenotypic identification of the production of ESBL has been carried out by using the combined disk diffusion method. PCR technique was used for amplification of the ESBL and non-ESBL encoding genes were $bla_{CTX\text{-}M}$, bla_{SHV}, and bla_{TEM}. Out of 70 *A. baumannii* isolates were resistant to 100% (ceftriaxone, ceftazidime, and cefepime) and 97.14% in cefotaxime. This result showed 27.14% (19/70) ESBL and non-ESBL producers were 72.85% (51/70) phenotypically. ESBL and non-ESBL producers encoded genes were $bla_{CTX\text{-}M}$, bla_{SHV}, and bla_{TEM} such as 11.76% (2/17), 11.76% (2/17), 64.70% (11/17) and 11.76% (2/17), 29.41% (5/17), 52.94% (09/17) respectively. Colistin and polymyxin B is the only effective drug for multidrug-resistant isolates of diabetic foot ulcer patients. Rapid spreading of ESBL producers and bla_{TEM} gene have a role in drug-resistant in the diabetic foot ulcer patients.

Keywords: *Acinetobacter baumannii*, Diabetic foot, Extended-spectrum Beta-lactamase (ESBL)

DECALEPIS HAMILTONII AMELIORATES H_2O_2-INDUCED OXIDATIVE STRESS AND APOPTOSIS IN H9C2 CELLS

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ABSTRACT

Decalepis hamiltonii (Dh) is used to treat various diseases in Indian traditional medicine due to its health-promoting properties. The present study was aimed to investigate the protective effect of *Dh* on H_2O_2 induced oxidative stress in H9C2 cells. Pre-treatment with *Dh* extract prior to H_2O_2 exposure significantly increased the cell viability and decreased the levels of LDH release. *Dh* extract inhibited H_2O_2 induced apoptosis and enhanced the number of viable cells in comparison to H_2O_2 treated cells as revealed by Flow cytometry analysis, AO/EB and DAPI staining. The Dh extract also attenuated the H_2O_2 induced oxidative stress by up-regulating the antioxidant enzymes, reducing oxidative stress markers and inhibiting ROS generation. The results suggest that *Dh* extract protects H9c2 cells from H_2O_2-induced cardiotoxicity and might be used as a therapeutic intervention in treating oxidative stress related cardiovascular diseases.

Keywords: *Decelepis hamiltonii*, Oxidative stress, H9C2 cells

DEVELOPMENT OF METADOXINE LIPID MICROSPHERES FOR ALCOHOL INTOXICATION

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ABSTRACT

Microspheres represent a promising drug delivery system for controlled and targeted drug release. They are specifically designed to release the drug in vicinity to target tissue and extend the drug release. The aim of this study was to overcome excessive alcohol intoxication globally by extending the activity of metadoxine. The present study involves the preparation of controlled release lipid microspheres of metadoxine by congealable disperse phase encapsulation method. Hydrogenated cotton seed oil (HSCO) and stearic acid were employed as the lipid matrix materials. Tween 60 was the droplet stabilizer used to form microspheres. The lipid microspheres prepared by stearic acid released all of the drug within 1 h. Upon compression, the drug release was very low. Therefore, the stearic acid microspheres were compressed in the tablet form by adding disintegrating agents, sodium alginate and Ac-Di-Sol(cross linked sodium carboxymethylcellulose). A pH-dependent drug release drug release was obtained from the tablets containing sodium alginate. With the tablets of stearic acid-microspheres containing Ac-Di-Sol, the controlled release had been achieved due to gradual disintegration from the tablet to aggregates and to individual microspheres.

Keywords: Lipid microspheres, Metadoxine, Alcohol intoxication, Controlled release

USE OF CAT SCORE AND IT'S CORRELATION WITH SPIROMETRY IN STABLE COPD PATIENTS

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ABSTRACT

India has experienced an increase in burden of COPD. Airflow obstruction is the hallmark of COPD which is identified by pulmonary function testing and used for it's diagnosis and staging. The CAT score was introduced as a simple tool to evaluate health status impairment in COPD patients. The CAT consists of 8 items with 6-point scale (scored 0–5) of severity for each item. Aim of this study was to co-relate CAT score and spirometry parameters. 200 patients of stable COPD were included. Their CAT score was noted and spirometry was done during their visit. The mean CAT score was 22.01, mean FEV_1 (%pred) was 76% and the mean FVC (%pred) was 85%. This study shows a highly negative correlation between CAT score and FEV_1 %pred. (r=-0.96) and between CAT score and FVC %pred. (r=-0.80) which is highly significant ($p<0.0001$). With the decrease in FEV_1 and FVC the CAT score increases. CAT score is free and easily assessed where there is no facility for PFT.

Keywords: COPD, Spirometry, CAT Score

IMPACT OF CLINICAL PHARMACIST LEAD COLLABORATIVE ASSESSMENT IN QUALITY OF LIFE THROUGH SF-36 QUESTIONNAIRE IN PATIENTS WITH SCHIZOPHRENIA ON ATYPICAL ANTIPSYCHOTICS

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ABSTRACT

The short form (SF-36) health survey is a 36-item, patient-reported survey of patient's overall health. The SF-36 is a measure of health status and an abbreviated variant of it, the SF-36, is commonly used in health economics as a variable in quality-adjusted life calculation to determine the cost-effectiveness of a health treatment. The objective of the study was to evaluate the quality of life (QOL) with the use of SF-36 questionnaire in patients with schizophrenia adherent on atypical antipsychotics. 60 schizophrenia patients by concealed randomization allocation method were assigned into two groups for a period of 6 mo. The primary segment was baseline data preceded by follow-up data after 2 mo. The result stated that intervention group was more effective with respect to improvement in QOL than the control group that is $p<0.05$. Interventional group was efficient due to the adaptation of SF-36 with the collaborative care of Pharmacist and Psychiatrist.

Keywords: Short form (SF-36), Schizophrenia, Atypical antipsychotics, Collaboration, Concealed randomization allocation, Quality of life (QOL)

A NOVEL CHITOSAN-LOADED BACTERIOPHAGE ANTIBACTERIAL GEL AGAINST *FUSOBACTERIUM ULCERANS* FOR TROPICAL SKIN ULCER TREATMENT

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ABSTRACT

Tropical skin ulcer (TSU) is common in children and teenagers living in some tropical regions. According to the World Health Organization (WHO), 100,000 cases of TSU has been reported in Thailand and other Southeast Asian countries. This study aims to evaluate the chitosan-loaded bacteriophage gel (CLBG) for the treatment of TSU against *Fusobacterium ulcerans*. The sewage was collected, isolated and suspended to obtain the phage. The plaque formed from phage propagation was then collected and recorded. The chitosan gel was prepared and mixed with activated bacteriophage lysate and tested using the minimum inhibitory concentration (MIC) and disc diffusion tests. Physico-chemical evaluation of the loaded gel was observed including viscosity, texture, TEM and pH. The plaque-forming units (PFU) of the bacteriophage were $6.8x10^4$ PFU/ml, $2.3x10^4$ PFU/ml, $1.1x10^4$ PFU/ml and $4.0x10^4$ PFU/ml. Physical evaluation revealed a milky yellowish formation of a gel texture with a pH of 4.63. Microscopic evaluation showed the morphology of chitosan and live tailless bacteriophage. The MIC values of CLBG against the selected pathogens were 1.0×10^{-5} ml/ml and 1.0×10^{-6} ml/ml, respectively. The zone of inhibition (ZI) for the CLBG was greater (>48 mm) compared to gentamycin (positive control;>25 mm). Statistical analysis using One-Way Anova showed the highly significant value of this study, with $p<0.001$. The CLBG demonstrated a greater synergism effect against the selected pathogen. Hence, the CLBG has a great potential to be a novel drug delivery for the treatment of tropical skin ulcer.

Keywords: Bacteriophage, Chitosan gel, Tropical skin ulcer, *Fusobacterium ulcerans*

DEVELOPMENT AND VALIDATION OF SIMPLE RP-HPLC ANALYTICAL METHOD FOR BOSUTINIB ASSISTED WITH DESIGN OF EXPERIMENTS FOR ROBUSTNESS DETERMINATION

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ABSTRACT

A simple, rapid, sensitive, robust, stability-indicating RP-HPLC analytical method was developed and validated for the analysis of bosutinib in bulk and in tablet formulation. Chromatographic separation was achieved on 4.6 x 250 mm column at ambient temperature. The mobile phase was acetonitrile and water (70:30). The analysis was performed at 272 nm. The mobile phase flow rate was 1 ml/min. 'Design of Experiments' (DOE) employing 'Central Composite Design' (CCD) and 'Response Surface Methodology' (RSM) were applied as an advancement to evaluate the effects of variations in selected factors (Flow, Mobile phase, and Wavelength) as graphical interpretation for robustness and statistical interpretation was achieved with Multiple Linear Regression (MLR) and ANOVA. The method was validated for linearity, limits of quantitation and detection, accuracy, precision, and robustness as per the International Conference on Harmonization (ICH) guidelinesQ2 (R1).

Keywords: Bosutinib, QBD approach, Central composite design, HPLC

STUDIES ON*IN VITRO* REGENERATION, ANTIBACTERIALAND PHYTOCHEMICAL SCREENING OF *NOTHAPODYTES NIMMONIANA* (GRAHAM) MABB

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ABSTRACT

Medicinal plants are highly demand for its curative nature and safe to use. Pharmaceutical companies are investing large amount of money for the extraction of bioactive compound from medicinal plants, one such bioactive compound is camptothecin (CPT), monoterpene pentacyclicquinoline cytotoxic alkaloid is promising anti-cancer drug in 21st century. *Nothapodytes nimmoniana* (Graham) Mabb. (*N. nimmoniana*) is an excellent source of CPT, 9-methoxy camptothecin and mappicine. *N. nimmoniana* is a small tree belongs to the family Icacinaceae, distributed in North-East India and Western Ghats. The present study aimed to develop the effective protocol for *in vitro* regeneration, phytochemical analysis and antibacterial activities. Mature and immature embryos of *N. nimmoniana* were inoculated on L2 medium supplemented with cytokinins and combination with auxins to obtain regenerated plants. Rapid propagation was achieved on L2 medium supplemented with BAP (2 mg/l) followed by KIN (1 mg/l). Whereas, multiple shoots were obtained from nodal explants of regenerated plants when sub cultured on L2 medium fortified with BAP (2 mg/l)+NAA (1 mg/l)+TDZ (0.2 mg/l). Somatic embryos were observed on MS medium supplemented with BAP (1 mg/l) and 2,4-D (1 mg/l) whereas, induction of callus was obtained on L2 medium with BAP (0.5 mg/l), NAA (1 mg/l) and 2,4-D (0.5 mg/l). Qualitative analysis carried out for this plant showed that the presence of alkaloids, flavonoids, polyphenols, steroids, saponins, tannins in leaf, bark, roots and callus. The highest content of total alkaloids are observed in methanolic extracts of bark. The methanolic root extract contain high amount of total flavonoids and tannins. Antibacterial activity was done by agar well diffusion method. Maximum zone of inhibition were observed in leaf and bark extract against *Bacillus subtilis* (8.3±0.5 and 8.16±0.28 mm) followed by root extract against *Pseudomonas aeruginosa* (9.33±0.57 mm)and the callus against *Klebsiella pneumonia* (8.83±1.04 mm). Our study concluded that methanolic extract proved as better solvent for phytochemical extraction and for antibacterial activity. Further studies have to be carried out to isolate and characterize the bioactive compounds.

Keywords: *Nothapodytes nimmoniana,* Icacinaceae, Callus, Phytochemicals, Antibacterial

PHARMACOVIGILANCE PROGRAMME OF INDIA

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ABSTRACT

Pharmacovigilance (PV) is the pharmacological science relating to the detection, assessment, understanding and prevention of adverse effects, particularly long term and short term side effects of medicines. It mainly deals with adverse effects of medications, biological products, vaccines, blood products, medical devices, herbal and traditional medicines. Government of India has launched Pharmacovigilance Programme of India (PvPI). This programme is coordinated by the Indian Pharmacopoeia Commission (IPC), Ghaziabad and initiated by Central Drugs Standard Control Organization (CDSCO).

Keywords: Pharmacovigilance, Adverse effects, IPC and CDSCO

PROTECTIVE EFFECT OF *CITRULLUS LANATUS* SEEDS AGAINST RHABDOMYOLYSIS-INDUCED MYOGLOBINURIC ACUTE RENAL FAILURE

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ABSTRACT

Citrullus lanatus (Thunb.) (Cucerbitaceae), commonly known as Matsumand Nakai, is a trailing annual herb grown in all tropical, subtropical and warm temperate (hot summers) regions of India, Nigeria, Africa. In India, its seeds are traditionally used for hypotensive, diuretic effect and in the treatment of the kidney stones and urinary passages. In this study, we evaluated the effect of methanol extract of *Citrullus lanatus* seeds (MCL) in rhabdomyolysis-induced myoglobinuric acute renal failure (ARF) in Wistar rats. ARF was induced by single intramuscular injection of glycerol (GL) (8 ml/kg). Animals pre-treated with MCL (100 and 300 mg/kg, p. o.) for 7 d before GL significantly (P<0.05) and dose-dependently altered and normalized serum creatinine, blood urea nitrogen (BUN), creatinine clearance, urea clearance, as well as renal morphology compared to GL treated group. It also significantly resumed parameters of oxidative stress such as superoxide dismutase (SOD), catalase (CAT), reduced glutathione (GSH) and lipid peroxidation. This study concludes that *Citrullus lanatus* seed demonstrated promising protective activity in GL-induced ARF substantiating its ethnomedicinal use.

Keywords: Acute renal failure, *Citrullus lanatus*, Glycerol, Rhabdomyolysis

SCREENING OFMETHICILLIN RESISTANT *STAPHYLOCOCCUS AUREUS*CARRIERS AMONG FOODHANDLERS

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ABSTRACT

Methicillin-resistant *Staphylococcus aureus* (MRSA) an important pathogen, associated with foodborne illness has recently been listed as one of the high-priority antibiotic-resistant pathogens by World Health Organisation. Since there is lack of information on the prevalence of MRSA carriers among food handlers, we screened the food handlers in and around Manipal. 112 samples were collected from 56 food handlers working in and around Manipal after consent. Samples were collected using sterile cotton swab moistened with sterile distilled water from the palms and nasal cavity and inoculated into the brain heart infusion broth overnight at 37 °C in an incubator. It was subcultured into blood agar and MacConkey's agar and further incubated for 16-18 h. Identification of MRSA was done according to the standard procedure. Cefoxitin 30µg, ampicillin 10µg and erythromycin 15µg discs from Hi-Media, Mumbai was used to test the susceptibility by disc diffusion method on Mueller Hinton agar. From among 56 food handlers, (50 males, 6 females), in the age group of 18 to 60 y (mean age, 29.63 years), 112 samples were collected. MRSA was isolated from 2 samples of palm and 2 from nasal cavity among 3 males. 7 males were carriers of methicillin-sensitive *Staphylococcus aureus,* sensitive to ampicillin and erythromycin. Our findings suggest that food handlers might be the source of contamination with MRSA that can cause disease in consumers. Vancomycin or teicoplanin the drug of choice, has to be used with caution. The data warrant a more comprehensive surveillance of MRSA among food handlers.

Keywords: MRSA, Food handlers, Cefoxitin

HEPATOPROTECTIVE AND TOXICOLOGICAL ASSESSMENT OF AN ETHNOMEDICINAL PLANT *HOLARRHENA ANTIDYSENTERICA L.*

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ABSTRACT

The *Holarrhena antidysenterica* L., syn. *H. pubescens* Buch.-Ham. Wall. Family Apocynaceae is a typical Indian medicinal plant. The leaves and bark are used to treat amoebic dysentery, diarrhoea, asthma, bronchopneumonia, malaria and some other disorders. The hepatoprotective potential of the ethanol extract of *Holarrhena antidysenterica* L., against rifampicin induced hepatic damage was investigated in Wistar albino rats. The acute and sub-acute toxicity were assessed in mice and rats, respectively. The ethanolic leaves and bark extract (200, 400 $mgkg^{-1}$ p. o.) showed remarkable hepatoprotective effect against rifampicin (50 $mgkg^{-1}$) induced hepatic damage in Wistar albino rats. The degree of protection was measured using the biochemical parameters serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), alkaline phosphatase (ALP), total bilirubin (TB) and total protein (TP). Treatment with ethanolic extract prior to the administration of rifampicin significantly ($P<0.05$ to $P<0.001$) restored the elevated levels of the said parameters on a par with the control group. The single dose LD50 was found to be 2,000 mg/kg bw when administered orally in mice. Sub-acute toxicity studies in rats with oral doses of 125, 250, 500 and 1000 $mgkg^{-1}$ exhibited no significant changes in body weight gain, general behaviour, haematological and biochemical parameters. The histological profile of liver and kidney also indicated the non-toxic nature of this drug. The ethanol extract of *Holarrhena antidysenterica* L. may have potential therapeutic value in the treatment of liver disorders and is safer to use even at higher doses when taken orally.

Keywords: *Holarrhena antidysenterica* L., SGOT, SGPT, Rifampicin, Histopathology

STANDARDIZATION, FORMULATION DEVELOPMENT AND CHARACTERIZATION ANTIULCER DRUG

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ABSTRACT

Ayurveda is the holistic approach towards the life, health, disease management through medicinal herbs minerals, diet and life style leads to great need for standardization of herbal medicine to maintain its safety and efficacy. Amongst many traditional ayurvedic formulations Mukta bhasma is unique herbo-mineral calcium containing preparation of Ayurvedic system of Indian traditional medicine. It is used traditionally as antipyretic, antiulcer and antacid. It is used in treatment of bone metabolic disorders associated with calcium deficiency. Mukta bhasma was prepared by Shodhana, Marana and Sharava samputa and standardization of bhasma is very necessary to confirm its identity and to determine its quality and purity. An attempt has been made to summarize the ancient and the advanced methods available for standardization of bhasma such as verna, varitara, rekhapurnatatvam, niruttha, DSC, FTIR, TGA, SEM, NPST, etc. The dosage uniformity and patient compliance can be increased and adulteration can be decreased in ayurvedic powders by formulating them into tablets. The aim of the present work is to develop and evaluate Mukta Bhasma tablets using starch and acacia as a binder. The granules were prepared by wet granulation method and the flowability of granules was studied. The prepared tablets were evaluated for different parameters such as weight variation, thickness uniformity, hardness, friability, disintegration time, Dissolution study also Mukta bhasma was subjected for acute toxicity of Mukta bhasma was conducted on albino rats. In acute toxicity study, Mukta bhasma were administered orally in albino rats of single maximum limit dose 2000 mg/kg and general behavioral observation along with any mortality was recorded. Acute toxicity study shows that there is no adverse effect of bhasma on albino rats even at single dose of 2000 mg/kg body weight that reveals that Mukta bhasma is safe in albino rats. The results suggest that this ayurvedic preparation possess significant gastro protective and antiulcer activity in lower doses of therapeutic range.

Keywords: Peptic ulcer, Mukta Bhasma, Standardization, Acute toxicity

MOLECULAR DOCKING STUDIES AND *IN VITRO* H^+K^+ATPASE ACTIVITY OF ISOLATED FLAVANOID FROM PHYLLANTHUS URINARIA

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ABSTRACT

Phyllanthus urinaria commonly known as Bhumyamlaki, is plant belonging to the family *Euphorbiaceae*. Pharmacological studies have revealed that various extracts of this plant exhibit anticancer activity [1], antiviral activity, and hypoglycemic activity. *Phyllanthus urinaria* contains lignin, seligatanins, phenolic compounds and flavonoids. Flavonoids have been reported to be having antioxidant activity and hence bioactive flavonoid quercetin was isolated from *Phyllanthus urinaria*. The isolated compound was subjected to FT-IR, ^{1}H NMR, [13]C NMR, mass spectroscopy and its structure was determined. Isolated bioactive flavonoid quercetin and standard omeprazole were virtually studied for their H+K+ATPase inhibitory activity by performing docking studies using Molegro Virtual Docker (MVD-2013, 6.0) on human H+K+ATPase (PDB ID: 8WX). Molecular docking study of the isolated compound was performed in order to understand the various interactions between the ligand and enzyme active site in detail [2]. Docking studies revealed its potential H+K+ATPase inhibitory activity effect as compared with omeprazole. The result of docking study was validated by *in vitro* proton pump inhibitory activity on goat mucosa. Quercetin was significantly ($*P \leq 0.05$) able to inhibit enzyme H+K+ATPase which is responsible for acid secretion. Finally, we conclude that the docking result and experimental results are in good agreement.

Keywords: *Phyllanthus urinaria,* Flavonoids, Antioxidant activity, Omeprazole

DEVELOPMENT AND VALIDATION OF STABILITY INDICATING RP-HPLC ASSAY METHOD FOR MEFENAMIC ACID

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ABSTRACT

The present research work was carried out to evaluate the stability behaviour of mefenamic acid under ICH Q1A (R2) recommended stress conditions. The drug was subjected to hydrolytic, oxidative, photolytic and thermal stress conditions. The drug was found susceptible for degradation under oxidative stress condition but was stable under hydrolytic, photolytic and thermal stress conditions. A total two degradation products (DPs) were formed which were separated using high-performance liquid chromatography (HPLC). The chromatographic separation was carried out on Sunfire ODS C-18 (250 x 4.6 mm, 5 µm) column. Optimum resolution was obtained using ammonium dihydrogen phosphate buffer (10 mmol, pH 4) and acetonitrile programmed in isocratic elution mode in the ratio of 45:55 v/v at 225 nm using photodiode array detector at a flow rate of 1 ml/min. The designed method was validated as per ICH Q2 (R1) guidelines. The response of the drug was linear in the concentration range of 10-100µg/ml (R^2= 0.9998). The method was found specific, precise and accurate. The mean accuracy was found to be 100.46%. The developed method was successfully applied for the analysis of marketed formulation.

Keywords: Mefenamic acid, Stability indicating, Stress conditions, ICH Q1A (R2)

RECENT GUIDELINES FOR MANAGEMENT OF TUBERCULOSIS IN INDIA

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ABSTRACT

According to World Health Organisation (WHO) statistics, Tuberculosis (TB) is one of the top ten causes of mortality worldwide and India has the highest burden of TB that too Multi-drug resistant TB (MDR-TB). The guidelines for diagnosis and treatment of TB have been changed time to time. Presently Ministry of health and Family Welfare in conjunction with WHO framed a National Strategic plan 2017-25 involving Programmatic management of TB (PMDT) with the aim of eliminating TB by 2025. In PMDT, the diagnosis and treatment is based upon whether there is Drug sensitivity (DS)/Resistance (DR). The drug resistance tests (DRT) Includes Cartridge Based Nucleic Acid Amplification test (CBNAAT) and Line Probe Assays (LPA). If a patient is having resistance to first and second line drugs as per DRT, then the treatment is decided basedupon DST.

Keywords: MDR-TB, CBNAAT, LPA

EFFECT OF ORYZA SATIVA PHYTOCHEMICALS ON ALZHEIMER'S DISEASE

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ABSTRACT

Sporadic Alzheimer's disease (SAD) is an age-related neurodegenerative disorder, characterised by dementia with ambiguous etiopathogenesis in which several cognitive and behavioral functionalities are impaired. It is considered as one of the extreme medical threat as it has become more prevalent globally and no efficient cures has been found for this disease. So, it is essential to address such age derived progressive anomaly. Hence, safe and effective treatment is essentially required for its prevention and cure. Findings of the current research signify safety and therapeutic efficacy of various *Oryza sativa* phytochemicals in context to their neuroprotective influence against various potential neurotoxins tested *in vitro* upon SHSY-5Y cell line followed by *in vitro* AchE enzyme inhibition and antioxidant effects. *In silico* AchE and ligand interaction studies aid the postulation for AchE enzyme inhibitory mechanism of phytochemicals. Next, phytochemicals were evaluated *in vivo* for their pharmacotherapeutic effects against streptozotocin (STZ) (3 mg/kg, i. c. v.) induced SAD in rats. Behavioural paradigms showed effects of phytochemical upon neurosbehavioral functions by alteration of rat's randomized autonomous or motivational behavior to its novel or familiarized surroundings by means of baited and randomized perception toward their surroundings and correlated with the neuro-structural alteration by means of histopathology and immunohistochemical analysis. Phytochemicals revealed neuroprotective, antioxidative, anti-AchE, anti-proinflammatory and anti-amyloidogenic effects. Moreover, they increased synaptic plasticity and reduced astroglial activation which was determined by elevated synaptophysin and reduced GFAP levels. Thus, such phytochemicals can be explored for their applications as a therapeutic moiety to improve cognitive and behavioral aspects of SAD associated dementia.

Keywords: Sporadic alzheimer's disease, Neurodegenerative disorder, *Oryza sativa*

ASSESSMENT OF ARAUCARIA HETEROPHYLLA GUM AS SUSPENDING AGENT IN THE FORMULATION OF SUSPENSION

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ABSTRACT

The present study aims to search for an economic and compatible natural excipient that can be used as an effective alternative for the formulation of pharmaceutical suspensions. So in this research suspending properties of different suspending agents were evaluated comparatively with each other. *Araucaria heterophylla* gum (AHG) obtained from bark of *Araucaria heterophylla* tree was subjected to some preliminary physicochemical and phytochemical evaluations. Zinc oxide suspensions were formulated with AHG between the concentration range of 1-5% w/v and compared with suspensions formulated with two standard suspending agents [Gum Acacia and Sodium Carboxy Methyl Cellulose (SCMC)]. Sedimentation volume (%), rheology, particle size and redispersibility were employed as evaluation parameters. The values obtained there from, were used as basis for comparison of the suspending agents studied. The results revealed that AHG is a hydrophilic polysaccharide gum containing mixture of monosaccharides and swells in water to produce viscous mucilage. AHG possessed suspending properties relative to other gums. The suspending abilities of the gums are in the order of 5% AHG = 5% SCMC =3% acacia. AHG is a potential alternative suspending agent in the preparation of pharmaceutical suspensions. All the formulations were stable. It was our conclusion that the difference in the physicochemical properties of zinc oxide suspension was influenced more by the suspending agent used in the formulations than the drug. AHG combined better redispersion with minimal changes in viscosity on storage compared to Na-CMC and acacia as suspending agent. Thus AHG may serve as a good suspending agent requiring no further aid in suspension redispersibility.

Keywords: Natural gum, Polysaccharide, Suspending agent

MOLECULAR DOCKING STUDIES AND NOVEL SYNTHETIC APPROACH FOR PROCESS DEVELOPMENT AND OPTIMIZATION OF PONATINIB: A POTENT BCR-ABL KINASE INHIBITOR

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ABSTRACT

The endeavour of this work is to design and develop a process for the synthesis of 3-[2-(Imidazo [1,2-b]pyridazin-3-yl)ethynyl]-4-methyl-N-{4-[(4-methylpiperazin-1-yl)-methyl]-3 phenyl}benzamide (Ponatinib), a potent orally active Pan-Inhibitor of Breakpoint Cluster Region-Abelson(BCR-Abl) Kinase. Ponatinib, an orally bioavailable multitargeted receptor tyrosine kinase inhibitor with potential antiangiogenic and antineoplastic activities inhibits all unmutated forms of BCR-Abl. A novel synthetic process developed for this compound involves reaction between 2 intermediates, which includes 3 and 4 steps respectively. Process development and optimization of each step was carried by studying various parameters like reagents, solvent, catalyst, batch size, mole ratio and temperature. The final compounds are synthesized by coupling of intermediates and were characterized by NMR, MS and IR spectral data. A novel synthetic process and optimization of 3-iodo-4-methyl-N-(4-((4-methylpiperazine-1-yl) methyl-3-(trifluoromethyl) phenyl benzamide was successfully developed. Synthesis of this compound involves sonagashira coupling of intermediates, 3-ethynylimidazo [1,2-b] pyridazine (PNB-III) and 3-iodo-4-methyl-N-(4-((4-methylpiperazine-1-yl)methyl-3-(trifluoromethyl)phenyl)benzamide (PNB-VII)which includes 3 and 4 step synthetic steps respectively. Both intermediate PNB-III and PNB-VII were optimized and scaled up from 10g scale batch to 100g scale batch. Reproducibility was observed on 100g scale batch.

Keywords: Ponatinib, Sonogashira coupling, Tyrosine kinase inhibitor, Molecular docking

CHITOSAN NANOPARTICLES ENHANCES THE CYTOTOXIC EFFECTS OF TAMOXIFEN IN BREAST CANCER CELLS

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ABSTRACT

This study was aimed at examining an effect of tamoxifen loaded chitosan nanoparticles on growth and proliferation of breast cancer cells. Breast cancer is one of the most common cancers and the second leading cause of cancer death among women worldwide. Tamoxifen is the most widely used anti-estrogen for the treatment of breast cancer. We hypothesize that tamoxifen loaded chitosan nanoparticles can showed better result from this anticancer drug. Breast cancer cell lines, MCF-7, were treated with developed tamoxifen loaded chitosan nanoparticles at 24, 48 or 72 h for MCF-7. We used the MTT assay and lactate dehydrogenase leakage (LDH) assay to evaluate cell viability and cytotoxicity, respectively. We have demonstrated that tamoxifen loaded chitosan nanoparticles were internalized well in breast cancer cells *in vitro*, suggesting their suitability in breast cancer treatment. Preferential uptake of nanoparticles rather than the free drug by MCF-7 cells causes the cells to be more viable to the free drug.

Keywords: Breast Cancer, Tamoxifen, Chitosan, MTT dye

PREDICTING *IN SILICO* THE POTENTIAL OF ACTIVE COMPOUNDS FROM *ALOE VERA* FOR THEIR ANTI-CANCER ACTIVITY

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ABSTRACT

A pre-cancer or pre-malignant state can be defined as the condition of disordered cell-morphology that has its association with an elevated risk of cancer development. If proper treatment is not administered, it may cause cancer. Many plants and potent molecules in their extracts have been studied for their anticancer values. *Aloe vera* is an important medicinal plant with many therapeutic properties, so it was decided to check the anticancer effect of *Aloe verain silico*. Fourteen proteins, having role in anticancer pathways have been selected via literature search. The three dimensional structure of these proteins were retrieved from Protein Data Bank (PDB). Ligand molecules were the anthraquinones present in aloe gel namely aloesin, barbaloin and emodin. The two dimensional structure of ligand molecules were retrieved from pubchem and docking was performed using Autodock 4 software. The result obtained after docking were evaluated on the basis of binding energy. Emodin binds best with topoisomerase I (PDB id: 1k4t) getting the binding energy of −5.71 kcal/mol. The measured ligand efficiency and inhibition constant with 1k4t observed are 65.38 and−0.29 μM, respectively. The best -docked confirmation of emodin showed hydrogen-binding interactions with active residues Trp416, Glu356, and lle377 active residues of 1k4t. The results of present study can be useful for designing and developing novel compounds having better inhibitory activity against several types of cancers. This potential agent will be a promising candidate and can further be validated in wet lab studies for its proper function and can proceed for clinical trials.

Keywords: *Aloe Vera*, Cancer, Docking, Emodin, Aloesin, Barbaloin

TO STUDY THE PRESCRIBING PATTERN OF HYPOLIPIDEMIC AGENTS IN A TERTIARY CARE TEACHING HOSPITAL IN NORTH INDIA-AN OBSERVATIONAL STUDY

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ABSTRACT

Dyslipidemia is one of the major risk factors for atherosclerosis and atherosclerosis-induced conditions such as coronary artery disease (CAD), ischemic heart disease (IHD) etc. Lipid-lowering agents are now the cornerstone of treatment used to reduce the risk of coronary events. There is a wide variation in selection and use of these drugs, drug utilization studies help to evaluate and analyze drug therapy from time to time. The objective of the study was to evaluate the prescribing pattern of hypolipidemic drugs in a tertiary care teaching hospital of north India. An observational, prospective study was carried out in patients attending cardiology and general medicine department of Acharya Shri Chander College of Medical Sciences and Hospital, Sidhra, Jammu (JandK) from January 2016 to June 2016. Prescription of the patients who were prescribed at least one hypolipidemic drug as monotherapy or in combination was evaluated. Data regarding the demographic details, morbidity pattern and drug utilization of hypolipidemic drugs and concomitant drugs was noted down. Patients morbidity pattern revealed that 57.8%, 51.3% and 29.7% patients suffered from ischemic heart disease, hypertension and type 2 diabetes mellitus respectively. On risk assessment 46%, 15% patients had borderline and high level of cholesterol respectively; 43.6% and 21.6% patients had borderline and high triglyceride levels respectively. 68.9% men and 59.8% women had low HDL cholesterol levels while 12.4%, 6.9% and 4% patients had borderline high, high and very high level of LDL cholesterol levels respectively. Among the hypolipidemic drugs, rosuvastatin was the most frequently prescribed drug in 49.08% patients followed by atorvastatin in 46.9% and fenofibrate in 13.5% patients. It was concluded from the present study that statins were the most frequently used drugs followed by fibrates among the hypolipidemic drugs in various disease conditions, both as primary and secondary preventive measures.

Keywords: Dyslipidemia, Hypolipidemic drugs, Drug utilization, Coronary artery disease, Statins

DEVELOPMENT OF TRANSDERMAL NANOGEL FORMULATION FOR THE TREATMENT OF ARTHRITIS

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ABSTRACT

Rheumatoid arthritis is an autoimmune disease and the typical symptoms are swelling, redness and persistent inflammation of joints, pain and loss of strength. Naproxen sodium is very effective for the management of arthritis and generally administered by oral route. However oral administration of naproxen sodium is associated with various side effects therefore alternative routes of administration such as cutaneous delivery was introduced. The present work focuses on the development of nanoethosomes for transdermal delivery. The prepared ethosomal formulations were subjected to characterization parameters such as size and morphology, zeta potential, *in vitro* release, ex-vivo permeation studies. and *in vivo* pharmacodynamic study. The optimized formulations with size of 129±0.01 nm, PDI 0.295, zeta potential-3.29 mV, entrapment efficiency 88% and drug release of 96.573% in 24 h were prepared. SEM analysis of the optimized formulation showed slightly smooth, spherical ethosome structures. The Confocal laser scanning microscopy showed ethosomes could easily infiltrate into deeper dermal layers (upto 104.9 μm) where as hydroalcoholic solution of drug could penetrate upto 74.9 μm. Further the transdermal flux of optimized ethosomal gel was found to be approximately 10 times more than hydroethanolic solution, suggesting enhanced permeation. In–vivo pharmacodynamic study of naproxen sodium loaded ethosomal gel exhibited higher percentage inhibition of swelling paw edema than marketed diclofenac gel.

Keywords: Naproxen sodium, Ethosome, Gel, Permeation

EVALUATION OF ANTI-SEIZURE ACTIVITY OF *SIDA* RHOMBIFOLIA ALONE AND IN COMBINATION WITH ANTI-SEIZURE DRUGS IN *SWISS* ALBINO MICE

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ABSTRACT

Anti-seizure activity of *Sida rhombifolia* in low (300 mg/kg) and high doses (600 mg/kg) and its combination with phenytoin (50 mg/kg) and sodium valproate (300 mg/kg) were studied in chronic model (14 d) of Maximal Electroshock Seizure (MES) and Pentylenetetrazole (PTZ) induced seizure respectively. In MES induced seizures *Sida* Rhombifolia in high dose prevented both tonic extension and tonic flexion but did not show any significant ($P>0.05$) effect on clonic phase as compared to vehicle group. In PTZ induced seizures *Sida rhombifolia* in high dose significantly ($P<0.001$) increase the latency of onset of seizures and both high and low dose *Sida rhombifolia* decrease the duration of seizure significantly ($P<0.01$) as compared to vehicle control, however there was no significant effect on onset of 1st myoclonic jerk ($P>0.05$) Addition of *Sida rhombifolia* to sub-therapeutic dose of sodium valproate and phenytoin showed synergistic effect. Inhibition of seizure by *Sida rhombifolia* could be due to presence of flavanoids that acts as a partial positive allosteric modulator at $GABA_A$ (γ-amino butyric acid) receptors, penetrates the blood brain barrier and possess the anti-convulasant activity and also because of its antioxidant property. *Sida rhombifolia* can be effective in generalized tonic clonic seizures alone and as add on with sodium valproate for absence seizures.

Keywords: *Sida rhombifolia*, Seizures, Pentylenetetrazole (PTZ), MES (Maximal Electroshock), Phenytoin, Sodium valproate

FORMULATION AND EVALUATION OF PHYTOSOME LOADED DRUG DELIVERY OF GINGEROL FOR THE TREATMENT OF RESPIRATORY INFECTION

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ABSTRACT

Respiratory tract infection (RTI) is a well-known issues and influence the working of the lungs and other respiratory organs in winter season, especially in kids and adults. The phyto-constituent antibacterial drug [Gingerol] was used to treat RTI but it exhibits pharmacological issues. To overcome these issues and make home grown treatment more viably for the treatment of RTI, novel drug delivery (nanoparticle) based phytosome loaded complex approach was adopted. The phytosome (GP) was prepared by mixing of gingerol and soya lecithin using anti-solvent precipitation technique. The phytosome loaded complex (LPC) was prepared by loading of phytosome (GLPC) in chitosan aqueous solution and characterized and evaluated. The physical compatibility studies demonstrated the confirmation of GLPC with soya lecithin and chitosan. The optimized GLPC and GP were irregular particle and spherical structures, with a mean particle size of 254.01±0.05 nm (-13.11 mV) and 431.21±0.90 nm (-17.53 mV), respectively. The % entrapment efficiency and % drug loading of GLPC (86.02±0.18 %, 08.26±0.72%) and GP (84.36±0.42%, 08.05±0.03%) was found, respectively. The *in vitro* release rate of GP (86.03±0.06%) was slower than GLPC (88.93±0.33%) in pH 7.4 phosphate buffer up to 24 h by diffusion process (Korsmeyer Peppas model). GLPC has shown the potent antioxidant activity, susceptible antibacterial activity and significant anti-inflammatory activity as compared to GP. GLPC has improved the significant bioavailability and also correlate the hematological values of GLPC on rabbit blood against the incubation of microorganisms (*S. aureus* and *E. coli*). The prepared nanoparticle based complex of phytosome loaded of phyto-constituent drug has the combined effect of chitosan and phytosome which shown better sustained-release profile and also prolonging the oral absorption rate of gingerol with effective antibacterial activity in a better stable way at different storage conditions than phytosome or drug with chitosan.

Keywords: Respiratory tract infection (RTI), Complex of phytosome loaded (LPC), Phytosome (P), Gingerol (G)

EVALUATION OF ANTIBACTERIAL EFFICACY OF TRIPHALA ON UROPATHOGENS

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ABSTRACT

The aim of the study was to investigate antibacterial activity of *Phyllanthus emblica* synonym *Emblica officinalis* (Amalaki, Amla), *Terminalia bellerica* (Bibhitaki) and *Terminalia chebula* (Haritaki) against multiple drug resistant uropathogens. Dried fruits of Amalaki, Bibhitaki and Haritaki were purchased from local Ayurvedic market and crude extracts were prepared in methanol by extracting in Soxhlet apparatus for 72 hours. Antibacterial activity of extracts was tested individually and in combination against multiple drug resistant uropathogens; *Escherichia coli*, *Pseudomonas aeruginosa* and *Enterococcus faecalis* (Vancomycin resistant *Enterococci*, VRE*).* Antibacterial activity was compared to ceftriaxone, co-trimoxazole (Sulfamethoxazole)/trimethoprim (SMX/TMP), norfloxacin, doxycycline, ceftazidime, cefoperazone/sulbactam and meropenem. Minimum lethal concentration for each extract has also been determined. Crude extracts of all three medicinal plants showed significant antibacterial activity when assessed by well diffusion method individually and in combination. Antibacterial activity was dose dependent. *Terminalia chebula* was most effective against Gram negative bacilli namely *E. coli* and *P. aeruginosa* while *Terminalia bellerica* was most effective against Gram positive cocci namely *E. faecalis.* Antibacterial activity of the three medicinal plant fruits in combination against multiple drug resistant uropathogens indicates its synergistic effect and explains the concept of using the three fruits together in Ayurvedic preparations in the name of Triphala in the prevention/remedy for infectious diseases. The susceptibility of vancomycin resistant *Enterococci* to these extracts is an important lead if explored may lead to the discovery of a novel antibiotic in the fight against global antibiotic resistance and nosocomial infections.

Keywords: Triphala, Antibacterial, Antibiotic resistance, Uropathogens, Nosocomial infections

ADAPTATION OF VALIDATED TOOL QUESTIONNAIRE IN SCHIZOPHRENIA PATIENT'S ADHERENT ON ATYPICAL ANTI-PSYCHOTICS AT TERTIARY CARE HOSPITAL

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ABSTRACT

Atypical antipsychotic class is a preferred therapy for schizophrenia prevalence. Antipsychotics impact on Quality of Life (QOL) of schizophrenic patients. Hence, tolerability of the therapy becomes a spotting factor with implications for patients quality of life (QOL) and clinical outcomes. To measure the QOL, Tolerability and Quality Of Life (TOOL) questionnaire reflects the subjective interpretation of side-effects in patients treated with antipsychotic medications. The objective of the study was to assess the effectiveness of TOOL through collaborative approach by clinical pharmacist towards QOL in schizophrenic patients on Atypical Anti-psychotics. A concealed randomized study design of 6 mo duration was conducted with 60 patients consisting of 30 in each arm stable on Atypical Antipsychotics with the follow-up of 2 mo. The result indicated with respect to psychometric properties of TOOL leading to total score of $p<0.05$ using Student 't' test. TOOL presents to be authentic and valid assessment scale which focuses on the pattern of Adverse Drug Reactions (ADR) of Atypical Anti-psychotics on QOL in schizophrenic patients.

Keywords: Tolerability and quality of life (TOOL), Schizophrenia, Atypical anti-psychotics, Concealed randomized study, Psychometric properties, Quality of life (QOL), Adverse drug reactions (ADR)

ENANTIOMERIC SEPARATION OF OXOMEMAZINE DRUG PRODUCT AND ITS PHARMACEUTICAL DOSAGE FORM ON AMYLOSE TRIS (5-CHLORO-2-METHYLPHENYLCARBAMATE) COLUMN

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ABSTRACT

An Ultra-Fast Liquid Chromatographic (UFLC) method with PDA detector was developed for enantiomeric separation of oxomemazine using standard drug and its formulation. Superior resolution was obtained between the enantiomers using the mobile phase *n*-hexane: IPA: DEA (60: 40: 0.1, v/v). This enantiomeric separation was performed usingamylose tris(5-chloro-2-methylphenylcarbamate) column and the peaks were observed at 227 nm using PDA detector. The method was validated according to ICH guidelines. Enantiomers of oxomemazine present in toplexil syrup were separated using this method. Influence of mobile phase ratio on the separation was studied. The separated enantiomers were identified using polarimetry. The developed method was appropriate for analysis of oxomemazine in the pure form and its formulation.

Keywords: Enantiomeric separation, Oxomemazine enantiomers, Validation

EVALUATION OF AMIODARONE USE IN CARDIOLOGY DEPARTMENT AT A TERTIARY CARE HOSPITAL, BANGALORE, KARNATAKA

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ABSTRACT

Drug utilization evaluation (DUE) is an on-going, authorized and systematic quality improvement process designed to review drug use and promote appropriate drug usage through interventions. Amiodarone belongs to antiarrhythmic class of cardio vascular medications prescribed to reduce morbidity and mortality in patients with cardiac disease. The present study aimed to evaluate the prescribing pattern of amiodarone use. A prospective, observational study was carried out in inpatients of cardiology departments of tertiary care hospital for a period of 6 mo. Structurally designed data collection form was used to collect patient data such as demographics, medical history, and treatment. The data was then analysed using Microsoft Excel and evaluated. A total of 51 patients were prescribed with amiodarone among which males accounted for 78.43 % (40) while females for 21.56% (11). Amiodarone was mostly prescribed among the age group 60-80 y (45.09%), followed by 40-60 y (29.41%) and 80-100 y (15.68%). The most common diagnoses were Ischemic heart disease 39.21%, (20), followed by myocardial infarction 33.33% (17) and Heart failure 31.37% (16). Furthermost of the study subjects had past medical history of hypertension (60.78%) followed by diabetes mellitus (52.94%). Average length of stay (LOS) in the hospital was 7.58±4.90 d. Average number of drugs prescribed per prescription was 12.19±4.72. The other class of drugs concurrently prescribed with amiodarone included anti-hypertensive (21.25%) followed by anti-platelets (10.86%) and anti-coagulants (8.66%). Percentage of amiodarone prescribed in injectable form is 29.03% whereas rest 70.96% was in tablet form. The increased LOS in our study population proposes that the severity of the disease might be high which may be attributed to the use of amiodarone. Furthermore poly pharmacy exaggerates the situation furthermore. There by auxiliary studies are required to be carried out in order to explore the risk of using amiodarone and to assess their benefit to justify their use.

Keywords: Amiodarone, Due, Length of stay

STUDY ON PRESENCE OF PATHOGENIC BACTERIA IN SERVING CUTLERIES FROM FOOD OUTLETS IN AND AROUND MANIPAL

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ABSTRACT

Presence of pathogenic bacteria on serving cutleries can cause food-borne diseases which lead to severe complications. Food handlers should maintain cleanliness of cutleries to prevent outbreaks of food-associated diseases. Present study was designed to create awareness among food handlers regarding pathogenic bacteria which can be present on cutleries and about the hygienic practices. Across sectional study. collected 100 samples from restaurants and food joints in and around Manipal. Sterile swabs moistened with sterile saline were used to collect samples which were then streaked on MacConkey's agar and incubated overnight at 37 °C. The colonies were identified by standard methods. Flyers regarding the importance of hygienic practices were distributed to the food handlers as a step to create awareness among them. The statistical method applied was convenient sampling method and the data was analysed in the table form. In total sample of 100, 33% of the samples were found to have bacteria. The samples from the food joints had slightly higher number of bacteria compared to the samples collected from restaurants. The data collected showed highest number of Klebsiella sp. (4%) followed by Citrobacter (3%) in the samples collected from restaurants. Citrobacter(10%) and Staphylococcus aureus (4%) were seen in the samples collected from food joints. *E. coli* was identified from one of the samples collected from restaurants. Pathogenic organisms were found in the serving cutleries, screening the cutleries periodically can reduce the spread of food associated infection. Further study is needed to confirm the findings.

Keywords: Food handlers, Cutleries, Klebsiella Species

PATIENT OUTLOOK AND PRACTICE IN IRON DEFICIENCY ANEMIA: A PROSPECTIVE OBSERVATIONAL QUESTIONNAIRE BASED STUDY

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ABSTRACT

Iron deficiency anemia (IDA) being the most common nutritional deficiency (affects one in every four people around the world) poses a big challenge to mankind. The following study was conducted to assess the attitudes and practice of anemic subjects regarding anemia and dietary requirements in a tertiary care hospital. The study was prospective, questionnaire-based observational analysis conducted for eight months (August 2016-March 2017) amongst the Iron Deficiency Anemia (IDA) patients admitted into the wards of General Medicine and fulfilled study criteria. Food and Agriculture Organization of the United Nations (FAO) Guidelines was employed in interviewing the eligible patients. Data was analyzed separately for each question. The study enrolled 149 (95 female, 54 male) patients above 18 y of age with their consent. About 42% of the subjects considered IDA to be "not serious". Around 90% knew that consumption of iron rich food like leafy vegetables, meat and egg is beneficial in IDA. However, 30% expressed their difficulty in consuming the same, stating the cost (83%) as the primary reason for their inability to access iron rich food and religious restriction in addition to personal dislike (17%). Practice of consuming iron rich food was found to be poor, and only a few used to consume citrus fruits, which aid iron absorption. In spite of hospitalisation due to anemia, patients had unfavourable attitudes and their practice was not oriented towards improvising their condition. This demands counselling from clinical pharmacist in such patients regarding the complications of IDA, adherence towards therapy and appropriate diet to improve their quality of life.

Keywords: Perceptions, Practice, Iron Deficiency

SYNTHESIS AND BIOLOGICAL SCREENING OF SOME POTENTIAL COMPOUNDS AS PROMISING AGENTS AGAINST CANCER

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ABSTRACT

Quick selection of epidemiologically relevant, drugable enzyme targets coupled to efficient lead finding and optimization needs more intervention in the area of high throughput cancer genome based molecular therapeutics. All these concerted efforts may pave the silver lining to tailor made personalized cancer therapeutics. Specifically, some tyrosine kinase inhibitors and their potential in clinical application are well documented by dramatic examples like, Gleevec, Iressa and Nexavar etc. Several tyrosine kinase inhibitors are undergoing human trials and several are in the pipeline of drug discovery. Keeping in view their importance, twenty new substituted imine derivatives (2a-2t) were synthesized and docked with eight different tyrosine kinase enzymes (*Aurora A Kinase* PDB: 3FDN, *Aurora B Kinase* PDB: 2VRX, *human Abl kinase* PDB: 3CS9, *human CDK6-VCYCLIN* PDB: 2EUF, *C-MET* PDB: 4XMO, *EGFR* PDB: 1M17, *Focal Adhesion Kinase* PDB: 2JKK, *human VEGFR-2* PDB: 3VHE). On the basis of docking results, Abl Kinase and VEGFR-2 target were found to possess very good receptor interactions and bindings which can be also seen in the docking scores. Both the targets were found to be perfect for Enzyme inhibition assay of all twenty compounds. Simultaneously, all compounds were sent to NCI, USA for sixty-cell line based anticancer screening, out of which fifteen compounds were selected for one dose anticancer assay. Compounds 2a (NSC: D-795068/1) and 2g (NSC: D-795071/1) were found potent during one dose anticancer screening and fulfilled the specified threshold for growth inhibition criteria of NCI and further selected for full panel five dose assay at 10-fold dilutions of five different concentrations. Both compounds 2a and 2g displayed Mid GI_{50} values of 1.69 μM and 1.54 μM respectively against the cell lines of leukemia, non-small cell lung cancer, colon cancer, CNS cancer, melanoma, ovarian cancer, renal cancer, prostate cancer and breast cancer. The results were found even better than the standard used (Fluorouracil) by NCI. *In silico* studies and ADME prediction also supported the potential of these compounds as tyrosine kinase inhibitors. It is expected that the said compounds may deliberate a substantial therapeutic benefit over existing treatments for cancer.

Keywords: Cancer, NCI, Tyrosine Kinase, IMINE, ABL Kinase, VEGFR-2

APPLICATION OF REAL TIME PCR IN THE DIAGNOSIS OF NEONATAL ACUTE BACTERIAL MENINGITIS IN A TERTIARY HEALTH CARE CENTER IN INDIA

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ABSTRACT

Acute bacterial meningitis in neonates is known to have significant morbidity and mortality. One in ten neonates die from meningitis and majority of the survivors develop significant lifelong neurological deficits. Diagnosis of neonatal meningitis is technically challenging, invasive and time–consuming as the majority of babies receive antibacterial therapy before getting admitted at the center. Real time PCR accelerates the diagnostic approach. 28 CSF were collected from March, 2015 to December, 2017. All samples were processed in the Department of Microbiology, AIIMS, following standard Microbiological diagnostic procedure. Blood agar and Mac Conkey agar were used for culture. Brain heart infusion broth with 0.5% yeast extract was used for culture of *L. monocytogenes*. Bacterial antigen from CSF was detected by Latex agglutination test (LAT) using Directigen meningitis Kit (BD, USA) and DNA from CSF was extracted by using QIAamp DNA mini Kit (Qiagen). Culture, latex agglutination and Real time PCR were performed to test each sample for *S. agalactiae, E. coli* and *L. monocytogenes.* Overall 28 CSF samples were processed by conventional and molecular methods. Five (17.85%) were positive for organisms by conventional and molecular method. Out of the five organisms, three *E. coli (60%)* and two *S. agalactiae* (40%) were detected. Of the three *E. coli* (one was positive by latex agglutination and culture), but all were positive by Real time PCR. However, all *S. agalactiae* (detected by Real time PCR). Mean glucose and protein level was (36 and 124/dl) respectively. PMN cell count was high. Real time PCR has becoming the powerful tool for the rapid diagnosis of neonatal acute bacterial meningitis where there is the need for urgent diagnosis and treatment. In this study*, E. coli* was the most frequently identified pathogen in neonates followed by *S. agalactiae*.

Keywords: Acute bacterial meningitis, Neonatal meningitis, *S. agalactiae*, *E. coli*

EFFECTIVENESS OF BUPIVACAINE AS SPINAL ANAESTHETIC AND FENTANYL/DICLOFENAC AS POST ANALGESIC IN PATIENTS UNDERGOING MICROENDOSCOPIC DISCECTOMY

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ABSTRACT

To evaluate the effectiveness of 0.5% hyperbaric Bupivacaine in spinal anesthesia and Fentanyl/Diclofenac in post analgesia in patients undergoing Microendoscopic Discectomy. The present study was conducted on 148 patients for six months. Mixed non-probability sampling technique was employed in our study. The subjects are recruited based on their accessibility, easiness to recruit (convenience sampling) and the patients should suffer from Lumbar disc prolapse (purposive sampling). The scale used for pain is visual analogue scale. Wilcoxon signed rank test was employed to find association between pre-and post-operative clinical parameters of spinal anesthesia and analgesia. Mann Whitney U test was employed to know association of post analgesia between Fentanyl and Diclofenac group. If p-value<0.05, then it was considered as significant, p-value<0.01 then it is considered as statistically highly significant.

Of all 148 patients, 83 patients (56.08%) are in between the age group 41-60 y and 87 patients (58.78%) were male. Spinal anesthesia is given in sitting position for 106 patients (71.62%) and lateral position for 42 patients (28.38%). The mean onset of motor blockade was found to be 11.28±2.12 min and the mean onset time of sensory blockade was found to be 8.79±1.93 min. The mean systolic blood pressure was found to be 106.15±13.53 and mean heart rate was found to be 71.63±10.74. The mean respiratory rate during the surgery was found to be 17.13±3.47. In our study the mean pre-operative systolic blood pressure was 122.84±11.78, mean post-operative systolic pressure was 119.32±9.08, mean pre-operative diastolic blood pressure was 79.72±8.49, mean post-operative diastolic pressure was 78.5±9.67, mean pre-operative pulse rate was 86.26±10.21, mean post-operative pulse rate was 87.58±9.38, mean pre-operative respiratory rate was 19.11±1.74, mean post-operative respiratory rate was 18.32±2.004. 0.5% Hyperbaric Bupivacaine as spinal anaesthetic and Fentanyl (1 $\mu g\ kg^{-1}\ h^{-1}$)/Diclofenac (IM-50 mg, rectal suppository-50 mg) as post analgesic was effective in patients undergoing Micro endoscopic discectomy.

Keywords: Bupivacaine, Fentanyl, Diclofenac, Spinal anaesthetia, Analgesia

A STUDY OF LEFT ATRIAL VOLUME INDEX IN PATIENTS OF ANTERIOR WALL MYOCARDIAL INFARCTION AS A SHORT TERM PROGNOSTIC INDICATOR

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ABSTRACT

Acute ant wall MI is a significant public health problem in developing countries. Heart failure following acute Ant wall MI is a leading cause of cardiovascular morbidity and modality. LAVi is transthoracic 2D echo parameter and used as prognostic marker regarding HF and hospital stay and 75 patients of Ant wall MI are included in this study. LAVi Is measured on admission by transthoracic 2D echo. LAVi>35 in 20 patients show prolonged hospital stay mean 8 d and presented with heart failure in killip class 3 where p value<0.01. Patient with LAVi<35 in 55 patient shows hospital stay mean 5 d and no heart failure. This study shows that more the LAVi more the hospital stay and more prone for heart failure LAVi is easily calculated on admission by 2D echo and used as a prognostic indicator regarding patients hospital stay and heart failure.

Keywords: Left atrial volume index, Transthoracic 2D echo, Killip classification

GENOMIC LEVEL INTERACTION OF BIOGENIC ZINC OXIDE NANOSTRUCTURES ON PROKARYOTIC AND EUKARYOTIC CELL SYSTEMS

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ABSTRACT

The recent advent of biogenic nanoparticles with adsorbed biomolecules offers a plethora of biomedical applications. The nanoparticle-DNA interaction is an interesting field of research employable in gene therapy and drug delivery applications. Zinc oxide possesses high catalytic and strong adsorption ability. The present study involved *in vitro* interaction of negatively charged DNA and positively charged zinc ions released from biogenic zinc oxide nanostructures, in prokaryotic and eukaryotic cells. We biosynthesized *Graviola* seed extract-mediated zinc oxide nanostructures averaging 41 nm in diameter, characterized using UV–Vis/FTIR spectroscopy, X-ray diffraction, Scanning electron microscopy and Energy dispersive X-ray spectroscopic analysis. Good antibacterial activity of bionanoparticles was found against clinical isolates of *Escherichia coli, Klebsiella pneumoniae and Staphylococcus aureus* at 400µg/ml, 175µg/ml and 225µg/ml respectively. Following treatment, a dose-dependent disappearance of isolated bacterial DNA was visualized in agarose gel electrophoresis indicative of a degradative genomic DNA-Zn ionic interaction involved bacterial-killing by zinc oxide nanoparticles. These biogenic nanostructures also showed antiproliferative potential against leukemic K562 and colon HCT-116 carcinoma at 48 h of treatment. Hoechst 33258 staining as well as comet assays of treated cells including electrophoresis of isolated genomic DNA also revealed occurrence of nuclear/chromatin/DNA fragmentation. Further, mitotic chromosomes from normal human lymphocytes and *Allium cepa* root tips exposed to ZnO nanoparticles were analyzed by staining with Giemsa and acetocarmine respectively. Noticeably, selective toxicity of the green-synthesized ZnO nanostructures was evident only in respect of cancer cells but not against normal human and plant cell tested in the study.

Keywords: Zinc oxide, Nanostructures, Biogenic, DNA, Antibacterial, Antiproliferative, Selective cytotoxicity

DOCKING AND DEVELOPMENT OF HIGHLY PREDICTIVE 3D-QSAR KNN-MFA MODELS FOR IMIDAZOPYRIDINEDERIVATIVES AS AN ANTI-CANCER AGENT

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ABSTRACT

Development of new anti-cancer agents using 2D/3D QSAR analysis. The 3D QSAR study was performed using k-nearest neighbour molecular field analysis (kNN-MFA) approach for electrostatic, steric and hydrophobic fields. The 2D QSAR analysis was performed with MLR technique. 2D and 3D QSAR analysis were performed on recently synthesized imidazo[4, 5-b] pyridine and 4-heteroarylpyrimidine (38 compounds) derivatives for their anti-canceractivities on MCF-7 and on HCT-116 cell line. The activity of the imidazo[4,5-b]pyridine and 4-heteroarylpyrimidine on MCF-7 and HCT-116 cell line were converted into-log 1/C. The statistically significant 2D-QSAR models for MCF-7 arer^2 = 0.9150 and q^2 = 0.8563 and on HCT-116 giving r^2= 0.8500 and q^2=0.7693. 3D QSAR results for internal (q^2 = 0.8003, q^2=0.8170) and external (predictive r^2 = 0.6022, q2 = 0.7773) validation criteria. Thus, 3D QSAR models showed that electrostatic effects dominantly determine the binding affinities. 2D QSAR studies revealed that T_C_N_1 descriptors were major contributing descriptor in case of MCF-7 and T_N_N_3 in case of HCT-116. The overall degree of prediction was found to be around 62.03% in case of MCF-7 and in HCT-116 it is around 66.86%. The overall degree of prediction was found to be around 60.22% and 77.73% respectively by using kNN-MFA method. By these results we designed new analogues which are more potent than previous one. 3D QSAR results suggested the importance of some molecular characteristics, which should significantly affect the binding affinities of compounds. And by using these data the newer molecules were designed. The docking studies of all newly designed molecules were performed using GRIP based Batch docking by using specific receptor.

Keywords: Imidazopyridine, QSAR, KNN-MFA

EFFECT OF ANTICONVULSANT DRUGS ON THYROID STIMULATING HORMONE

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ABSTRACT

Anti-epileptic drugs (AED) are an integral component of management of seizure disorder. However, they have wide spectrum of adverse effects. It is important to be aware of these side effects as they have a major impact on quality of life and are sometimes partially reversible after drug discontinuation. Among them the influence of AED on thyroid function is important and data available is limited. Objective of this study is to evaluate the effect of AED on thyroid stimulating hormone (TSH). It is a cross-sectional study among epileptic patients who are on phenytoin, carbamazepine, sodium valproate for more than six months in a tertiary care center; in central Kerala. Serum levels of TSH of patients on AED were compared with that of 50 healthy control group. A total of 150 epileptic patients with mean age (years) of 35.54+10.72 [66 males (44%) and 84 females (56%)] were enrolled in this study. 50 adults of mean age 36.5+8.4 with male to female ratio 1.10:1 formed the control group. It was found that mean TSH (microIU/ml) value of patients on phenytoin (3.97+1.47), carbamazepine (3.57+1.44) and sodium valproate 3.03+1.41 were significantly higher than that of control group (1.91+0.72). 9 out of 12 hypothyroid patients were taking drugs for more than five years. Hence, there is a positive correlation between the use of anticonvulsants and thyroid dysfunction, and the association increases with duration of therapy. The clinicians should be encouraged for regular monitoring of thyroid function tests to impart a better quality of life to the patients.

Keywords: Anti-convulsant drugs, Anti-epileptic drugs, Thyroid stimulating hormone, Hypothyroidism, Epilepsy, Adverse drug reaction, Adverse effects

A LIQUID ORAL IN SITU GELLING SYSTEM OF A SYSTEMIC ANTIFUNGAL FOR SUSTAINED RELEASE: STATISTICAL DESIGN, DEVELOPMENT AND EVALUATION

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ABSTRACT

The low pH dependent aqueous solubility of the systemic antifungal Voriconazole necessitates it's encapsulation in hydroxy propyl-β-cyclodextrin to enhance its solubility and stability thereby develop a liquid oral *in situ* gel of voriconazole with increased gastric residence time to improve its bioavailability and sustain its release. A 2^2 factorial design was employed using the pH dependent polymer carbomer 934 and the release retardant HPMC E50 (independent variables) and gelation time, muco-adhesive strength, drug release at 1 h, 8 h, 12 h and gel strength as responses The polymers had significant effect on gelation time, muco-adhesive strength and drug release at 8 h. Carbopol showed a better controlled release and muco-adhesive strength than HPMC E50. The FT-IR and DSC studies showed no interaction between the drug and excipients. The experimental values of optimized formula i.e., gelation time, muco-adhesive strength, drug release at 1 h, 8 h,12 h and gel strength were found to be 80 sec, 17453 dynes/cm, 21.0%, 62.980%, 90.541%, 55 sec which were close to the predicted values. Pharmacokinetic studies revealed a sustained release of 12h and the plasma drug concentrations were within the MIC of 0.5µg/ml. Histopathological studies showed that the integrity of the gastric mucosa was preserved indicating safety of the in situ gel. Thermal and photostability studies revealed stability of the optimized formulation with a shelf life of 2 y.

Keywords: Voriconazole, Muco adhesive, Liquid oral, *In situ* gel, Carbomer 934, HPMC E50, Pharmacokinetic studies

DESIGN AND CHARACTERIZATION OF D-LIMONENE AND LIQUORICE LOADED NANOSPONGE BASED DRUG DELIVERY SYSTEM FOR COMPLETE ERADICATION OF H. PYLORI INFECTION

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ABSTRACT

H. pylori is the prominent etiologic factor responsible for peptic ulcer disease. With the major conceptual fact that *H. pylori* plays a dominant role in majority of peptic ulcer, prevention of relapse is focused on eradication of this organism from the stomach. *H. pylori* is approximately involved in 100% of chronic active antral gastritis cases, 90% of duodenal ulcer patients, and 50-60% gastric ulcer patients. Single antibiotic regimens led to the result of failure in *H. pylori* treatment, due to above reason various combination regimens are suggested to increase the rate of *H. pylori* eradication. *H. pylori* deals with the utmost importance for choosing the drug delivery system. One of the best approaches followed to extend the residency of medication in the stomach is of lower density floating dosage form, so that the gastric fluid should be capable of floating on the gastric juice in the stomach. Conventional dosage forms are treatable for *H. pylori* but complete eradication does not take place. Some novely arrived drug deliverance technologies include double liposomes, microspheres, microbeads, microballons, as well as mucoadhesive drug delivery systems. The main aim of this research work deals with the fact of better, approachable as well as optimized drug delivery concepts specified for *H. pylori* eradication in less time interval. The formulation with a size of less than 100 nm was said to be prone to fusion with bacterial membrane, thereby directly releasing a high dose of active drug moiety into the bacterial membrane, which can further led to absorption of active content. In the present research work, design and characterization of D-Limonene and liquorice loaded nanosponge based drug delivery system for complete eradication of *H. Pylori* infection. Research initiated with the full over optimistic carry over approach which will enlighten the novel concept of the drug deliverance through a *in situ* gel based system integrating nanosponges loaded with combined regimen therapy based drugs.

Keywords: *H. pylori,* Peptic ulcer, Nanosponge, Drug delivery systems

FORMULATION AND EVALUATION OF AN ANTIMICROBIAL MUCOADHESIVE DENTAL GEL

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ABSTRACT

Objective of this study was to formulate and evaluate an antimicrobial mucoadhesive dental gel of herbal drugs for prevention and treatment of dental plaque, dental caries and periodontitis. *Azadirachta indica* leaves extract was prepared with ethanol: water (80:20 v/v) for 48 h under dark condition. Glycyrrhiza glabra roots extract was prepared with ethanol: water (30:70 v/v) for 60 min at 50 °C. Both the extracts were evaluated for organoleptic properties, pH, phytochemical screening and total phenolic content. Antibacterial activity of extract was done on Mueller Hinton agar media against *Streptococcus mutans* using disc diffusion method. Mucoadhesive gel was prepared using Carbopol 934, PEG 400 as a bioadhesive polymer and permeation enhancer, respectively. Three (F1, F2 and F3) gel formulation of Carbopol 934 were prepared at various concentrations 0.4%, 0.6% and 0.8% w/v. Dental gel formulations were evaluated for different parameters such as appearance, pH, viscosity, spreadabilty, syringeability. Optimised batch F2 was used for further studies viz. stability study, drug content, diffusion study to determine percent cumulative release of drug from gel formulation and *in vitro* mucoadhesion study. 2.5% w/v of *Azadirachta indica* leaves extract showed good zone of inhibition (10.66±0.577 mm) near to Chlorhexidine (11.33±0.5773 mm). 0.5% of *Glycyrrhiza glabra* roots extract exhibit bioenhancing effect (9±1 mm) and mask bitter taste of formulation. Batch (F2) was selected on the basis of viscosity, spreadabilty and syringeability. The optimised batch was found to be stable and has 83% drug content. Percent cumulative release of drug from gel formulation during diffusion study was found to be 87.52%, Adhesive force and adhesiveness were found to be 11.90 g and 0.92 millijoule, respectively during mucoadhesion study. Results of antimicrobial study shows that *Azadirachta indica* leaves extract has good antibacterial activity. *Glycyrrhiza glabra* roots extract mask the bitter taste as well as bioenhancing effect. Results of *in vitro* mucoadhesion study indicate that the mucoadhesion gel was formulated with sufficient residence time of formulation.

Keywords: *Azadirachta indica*, *Glycyrrhiza glabra*, Oral local drug delivery, Mucoadhesive gel, Carbopol 934

ANTIOXIDANT AND ANTIDIABETIC ACTIVITY OF *EMBLICA OFFICINALIS* AND *AEGLE MARMELOS* EXTRACTS IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

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ABSTRACT

The objective of the present study was to develop a formulation of *Emblica officinalis* and *Aegle marmelos* extracts for antioxidant and antidiabetic activity. The phytochemical analyses, TLC, DPPH assay, total phenolic content was performed for freeze dried *Emblica officinalis* fruit's aqueous extract (EOFAE) and *Aegle marmelos* leave's ethyl acetate extract (AMLEAE). Formulation was prepared by solid dispersion (SD) method was performed by using PEG 6000. *In vivo* study was conducted on male albino wistar rats for 21 d in streptozotocin-induced diabetic rats, where 42 rats utilized and divided into 7 groups with 2 doses levels. The antidiabetic activity was measured by blood glucose and biochemical parameters i.e. total cholesterol, triglycerides, total protein. Oxidative stress measured in liver by level of antioxidant biomarkers i.e. superoxide dismutase, reduced glutathione, lipid peroxidation by thiobarbituric acid reactive substances method. Both extracts exhibits quinones, phenols, where as tannins, saponins, carbohydrate, glycosides in EOFAE. Coumarins and flavonoids are found in AMLEAE. TLC showed Rf at 0.39 for standard gallic acid, 0.41 for EOFAE and 0.5 for AMLEAE. In DPPH assay, % inhibition showed by EOFAE (97.8%±2) and by AMLEAE (97.2%±2). Total phenolic content was found in standard gallic acid (485.7±0), EOFAE (315.6±0) and AMLEAE (300.7±0) represented in mgGAE/g. Histopathological examination of liver was revealed that low dose 500 mg/kg body weight daily for 21st days showed a significant activity (₹0.001) with biochemical parameters and antioxidant biomarkers. The present *in vivo* study showed that the EOFAE and AMLEAE treated group 4th with low dose 500 mg/kg have potent antioxidant and antidiabetic activity.

Keywords: *Emblica officinalis, Aegle marmelos,* Antioxidant, Antidiabetic Activity, Streptozotocin, Solid dispersion, Method development

A STUDY ON TOPICAL FORMULATION OF *SYZYGIUM AROMATICUM* OIL FOR ANTIBACTERIAL ACTIVITY

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ABSTRACT

The objective of this study was to formulate and evaluate an anti-acne cream of *Syzygium aromaticum*. *Syzygium aromaticum* oil was steam distilled using clevenger apparatus and isolated using dichloromethane in separating funnel. Antimicrobial activity of *Syzygium aromaticum* oil was done on Muller Hinton agar media against *Staphylococcus aureus* and *Propionibacterium acne* using disc diffusion method. Standard clindamycin 1% w/v compared with 0.6% v/v and 0.8 % v/v *Syzygium aromaticum* oil. Herbal vanishing cream was prepared using *Syzygium aromaticum* oil, stearic acid, cetyl alcohol, paraffin oil and glycerine as emulsifier, penetration enhancer, emollient and humectant respectively. Cream formulations were evaluated for different parameters such as appearance, pH, viscosity, dye test. Optimized batch was used for further studies viz. adhesiveness, drug content and diffusion study. HPLC method was developed for analysis of eugenol in cream formulation using methanol: water: acetonitrile (50:40:10 v/v) as mobile phase. HPLC column used was C18 Hibar licosphere, 250, 4.6, 5 µm at column temperature 28˚C, 1 ml/min of flow rate, injection volume 20 µl and at detection wavelength 280 nm. The method was validated for accuracy, precision, linearity, range, LOD, LOQ and robustness and system suitability parameters. The zone of inhibitions of 0.8 % v/v *Syzygium aromaticum* oil against *Staphylococcus aureus* and *Propionibacterium acne* were found to be 11 and 9 mm (±0.5 mm), respectively. The optimised batch was found to be stable and has 95.65% drug content. Percent cumulative drug release from cream formulation and adhesiveness was found to be 84.54% and 5 mJ respectively. The extracted *Syzygium aromaticum* oil shows considerable potency for antibacterial activity against *Staphylococcus aureus* and *Propionibacterium acne.* Hence, 0.8% v/w *Syzygium aromaticum* oil containing vanishing cream formulation can be used for acne treatment.

Keywords: *Syzygium aromaticum* oil, Antibacterial activity, Herbal vanishing cream, HPLC

IMPORTANCE OF POISON INFORMATION CENTRE IN ASSISTING HEALTHCARE PRACTITIONERS AND GENERAL PUBLIC

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ABSTRACT

To assist healthcare practitioners in timely management of the poisoning cases as well educating the general public on first aid management and preventing accidental poisoning. A prospective interventional study was conducted at the poison information centre located at a South Indian tertiary care hospital for a period of two years to assist the healthcare practitioners (HCP's) in timely identification and management of the poisoning cases presenting to the hospital with accidental or intentional poisoning as well as creating awareness among the primary healthcare centres to avail the poison information services in case of emergency due to poisoning. Moreover, educational programmes were conducted in rural and semi urban areas of the Mysuru district and various population groups were educated on first aid measures in accidental poisonings as well the strategies to prevent accidental poisoning in the home as well as society. The poison management protocols were provided to the treating clinicians as well the clinicians were assisted by timely identification of the poisonous substance through qualitative toxicological analytical services. The poison information services were provided to the healthcare practitioners with the aim of better patient care and updating the knowledge. A total of 411 queries were received and answered to the clinicians, post graduate students and nursing staff. Poison Information Leaflets (PIL's) were designed and distributed in order to create awareness among general public on prevention of poisoning and first aid measures to be adopted in accidental poisoning and various educational programmes were conducted in rural and semi urban areas. The awareness was also created among HCP's and general public through social media as well as by developing exclusive website as well as Android mobile application which was available cost free to the users for accessing the information. Poison information centre successfully assisted clinicians in timely identification and management of poisoning cases and was well appreciated for its existence. Moreover, a healthy response was observed from the general public for conducting the educational programs.

Keywords: Poison information centre, Poisoning, Poison information leaflets

NEUROPROTECTIVE EFFECT OF JUSTICIA ADHATODA LINN LEAF EXTRACT AGAINST STREPTOZOCIN INDUCED NEUROTOXICITY IN RATS

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ABSTRACT

Alzheimer's disease (AD) is the most common form of dementia that results in memory impairment and cognitive dysfunction due to progressive neurodegeneration. *Justicia adhatoda* linn, is shrub native to the plains of India useful in the treatment of tuberculosis, common cold, asthma, inflammation. The present study was undertaken to explore the neuroprotective potential of *Justicia adhatoda* linn leaf extracts against streptozocin induced neurotoxicity in rats. This effect is attributed to its ability to normalize the levels of the cholinesterases. STZ (3 ml/kg i. v.) significantly decreased the levels of cholinesterases when compared to control group. Rivastigmine (50 mg/kg, orally) pre-treated animals showed significant decreased levels of neuro toxicity which is evident from histopathological study. Histopathological studies revealed that aqueous extract of *Justicia adhatoda* protected the rats against STZ induced neurotoxicity similar to that of reference standard rivastigmine.

Keywords: *Justicia adhatoda*, Neurodegeneration, Neurotoxicity, Cholinesterases, Histopathological studies

PREPARATION AND *IN VITRO* EVALUATION OF NAPROXEN AS A PH SENSITIVE OCULAR IN-SITU GEL

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ABSTRACT

The aim of this study is to prepare and evaluate a pH sensitive ocular in-situ gel of naproxen delivery system, using various polymers to increase the ocular residence time. *pH sensitive in situ gel* formulations were prepared using different *concentrations of* carbopol 940 CB (0.5%,0.6%, 0.7%) in combination with hydroxy propyl methylcellulose HPMC K40 or K100 (0.5%, 0.75%, 1%, 1.5%). *The prepared in situ* gels were evaluated for appearance, pH, gelling capacity (sol-to-gel transition/*in vitro*), tonicity, rheological studies, *in vitro* release studies, release kinetic analysis, drug content, FT-IR studies, and ocular irritancy studies. The overall results showed that formula F10 exhibited excellent pH triggered in-situ gelation time, sustained the release of naproxen in test time period with a release rate of more than 90% in 3 hour time.

Keywords: *In situ* gel, Naproxen, Carbopol 940, Hydroxy propyl methylcellulose

DOT-ELISA OR THIN LAYER IMMUNOASSAY AND RUBELLA ANTIGEN

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ABSTRACT

In this immunoassay, the rubella antigen spotted on PVDF membrane. The membrane then blocked by incubating for suitable time in a standard buffer containing a suitable amount of blocking agent like non-fat milk. The PDF membrane then incubated with a suitable dilution of primary anti-rubella antibody followed by washing with suitable washing buffer. Rubella antigen bound specific antibodies detected by incubating the PVDF membrane in a second antibody conjugated to an enzyme (horseradish peroxidase) or (alkaline phosphatase) suitably diluted, followed by washing with washing buffer. Staining of the antigen-antibody (immune-complex) spot on PVDF membrane achieved by incubating it in a freshly prepared substrate. After a suitable time, the reaction terminated by washing the PVDF membrane in water. Reactive spots of the immune-complex identified by deposition of insoluble permanent red stain in case of using alkaline phosphatase conjugate. This is a qualitative serological technique. The amount of rubella antigen needed here greatly reduced compared with what needed in ELISA technique, because of the small immune-complex reaction spot on the PVDF membrane. The use of this PVDF membrane permits the spot reaction to be viewed against white color background. Negative control serum should be used. This technique is very good for antigens that are available in very small amounts as synthetic peptides.

Keywords: Immunoassay, Rubella antigen, Synthetic peptides

ISOLATION AND CHARACTERISATION OF PHYTOCONSTITUENTS FROM *ALPINIA GALANGA* RHIZOMES AND *GARCINIA INDICA* FRUITS

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ABSTRACT

The aim of this study is to assess the use of selected polyphenols from plant (*Alpinia galanga* rhizomes and *Garcinia indica* fruits, rich source of polyphenols) as potential anti-obesity agents. Authentic crude drug plant samples were procured and standardized using WHO guidelines. The material was extracted with methanol till exhaustion using soxhelet and filtered. The extracts will then be re-dissolved in distilled water and partitioned with hexane, and ethyl acetate. The ethyl acetate fraction was completely dried under reduced pressure and packed over a silica gel, subjected to column chromatography. The conditions for linear or gradient elution for normal/reversed phase, MPLC were optimized using polar strategy. The aliquot fractions were collected and evaporated to dryness using a rotary evaporator. Fractions with similar TLC profiles were combined to yield pooled fractions. To purify compounds, co-solvency, heating, evaporation and crystallization methods were used. Bis-napthalene propenone [(E)-1, 3-bis (6-methoxynaphthalen-2-yl) prop-2-en-1-one] and epi-stigmasterol glucoside [Stigmasta-6-en-3-ol-3-O-β-D-glucopyranoside] have been isolated from *A. galanga*. MPLC based separation resulted in isolation of luteolin, napthoic acid and triterpenic glycoside derivatives from *G. indica* fruits. Compounds were characterized on the basis of extensive spectroscopic data analysis. UV detection primarily constituted the basis of pooling. MPLC based separation methods resulted in isolation of polyphenols and phytosterol.

Keywords: Polyphenols, Alpinia, Garcinia, Isolation

5 S: AN EFFECTIVE WORKPLACE MANAGEMENT SYSTEM

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ABSTRACT

Many manufacturing facilities have opted to follow the path towards a "5S" workplace organizational and housekeeping methodology as part of continuous improvement or lean manufacturing processes. The term refers to five steps–SORT, SET IN ORDER, SHINE, STANDARDIZE AND SUSTAIN–that are also sometimes known as the five pillars of a visual workplace. The 5S methodology is a simple and universal approach that works in companies all over the world. It is essentially a support to such other manufacturing improvements as just-in-time (JIT) production, cellular manufacturing, total quality management (TQM) or six sigma initiatives, and also is a great contributor to making the workplace a safer and better place to spend time. Key components of the 5S philosophy are safety and good housekeeping practices. Safety is an integral part of the sort, set in order and shine segment of any 5S project. Standardize and sustain refers to methods used to ensure that safety and good housekeeping is maintained. 5S is one of the first tools that can be applied in a company that is starting down the path of the continuous improvement culture. A 5S implementation helps to define the first rules to eliminate waste and maintain an efficient, safe, and clean work environment.

Keywords: 5S, SORT, Set in order, Shine, Standardize, Sustain

STEVIA: A ZERO CALORIE PLANT–BIO-SWEETENER OF THE FUTURE

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ABSTRACT

Stevia is a perennial herb that belongs to the Asteraceae family. It is a natural sweetener plant and estimated to be 300 times sweeter than cane sugar. The leaves of stevia are the source of diterpene glycosides, viz. stevioside and rebaudioside. Stevioside is regenerated as a valuable natural sweetening agent because of its relatively good taste and chemical stability. Now it is being cultivated in Japan, Taiwan, Philippines, Hawaii, Malaysia and overall South America for food and pharmaceutical products. Products can be added to tea and coffee, cooked or baked goods, processed foods and beverages, fruit juices, tobacco products, pastries, chewing gum and sherbets. Health and safety issues have been extensive by considered and in the past 20 y media took significant attention in the US regions. Stevia sweeteners are purified extracts of one type of constituent, called steviol glycosides, found in the leaves of the stevia plant. The European Food Safety Authority and the World Health Organization both say these compounds are safe in the amounts typically used. This conclusion is based on studies — mostly industry funded — in bacteria and rodents that generally show that stevia doesn't cause damage to DNA or cancer, as well as several human studies that found no effect on blood pressure or blood glucose.

Keywords: Stevia, Steviol glycosides, Rebaudioside, Bio-Sweetener

KINETIC SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF LISINOPRIL BY CONDENSATION REACTION

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ABSTRACT

A very new and kinetic spectrophotometric method is developed for the determination of lisinopril from tablet dosage form by condensation reaction. This is highly robust, linear and most accurate. This is based upon the formation of coupled product with O-phenylenediamine. A degraded product of lisinopril absorbs at 424 nm. The beers law is obeyed within a concentration range of 5–25 ppm with correlation coefficient 0.999. The effect of temperature, concentration of coupling agent and time of completion of reaction were studied. Tablet dosage form was estimated and percent recovery was found between 97-100%. The method was validated for linearity, precision, accuracy and recovery studies.

Keywords: Lisinopril, Condensation reaction, O-phenylenediamine

DEVOLPMENT AND CHARACTERIZATION OF MANNOSYLATED MULTIWALLED CARBON NANOTUBES FOR THE TARGETTING OF LUNG CANCER

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ABSTRACT

The aim of present investigation was to evaluate *in vitro* and *in vivo* cancer targeting potential ofpaclitaxel (PTX) loaded mannosylated multi-walled carbon nanotubes (M/PTX-MWCNTs). Mannosylation on the surface of aminated multi walled carbon nanotubes and were evaluated for their dispersibity surface morphology, size, PTX entrapment efficiency, *in vitro* drug release and *in vitro* cytotoxicity on squamous carcinoma cancer cells line (NCI-H226) of lung. The PTX entrapment efficiency was found to be 83.51±0.19% due to π-π stacking interaction. *In vitro* release showed that the rate of PTX release in acidic condition (pH 5.3) was found to be faster than PBS (pH 7.4) followed by sustained release pattern. The improvement in pharmacokinetics parameters and median survival time for tumor bearing rats treated withM/PTX-MWCNTs was extendedvery significantly as compared to free PTX. Uptake of MWCNTs by tumor cells was enhanced due to receptor mediated endocytosis of the CNTs. These results concluded that developed water-soluble M/PTX-MWCNTs emerge as promising, safe and effective nano-medicine in the treatment of Squamous cell carcinoma lung cancer.

Keywords: Multiwalled carbon nanotubes, Mannosylated, Paclitaxel, NCI-H226 human squamous carcinoma cancer cells line targeting, Anti-tumor study

THE ENVIRONMENTAL CONDITIONS GENERATE QUANTITY VARIATION IN SOLUBLE PROTEINS OF *AILANTHUS EXCELSA* ROXB LEAVES

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ABSTRACT

The *Ailanthus excelsa* is an easily available medicinal plant that has various medicinal contents in each part. These medicinal contents use in the development of new anti-cancerous and anti-diabetic drugs. The quantity of metabolites that present in plant parts can different according to the environmental conditions. The soluble proteins were extracted from shade dried leaves of *Ailanthus excelsa* and samples were collected from three different places with five replications. These places were Mandsaur Dist. Mandsaur (M. P.), Ratlam Dist. Ratlam (M. P.), Chittorgarh Dist. Chittorgarh (Rajasthan), Sanwaliyaji Dist. Chittorgarh (Rajasthan), and Dakor Dist. Kheda (Gujarat). The percentage quantities of protein of five replicate samples (M1-M5) were collected from Mandsaur (M. P.). The % quantities of protein were found to be 5.7748, 5.800, 5.8125, 5.7874, 5.8251 respectively and their mean value was found 5.800%. The % quantities of protein of five replicates from District Ratlam (Madhya Pradesh) were found to be 4.7251, 4.7375, 4.7500, 4.7748, 4.7624 respectively and their mean value was obtained 4.750%. The values from District Chittorgarh (Rajasthan) samples were found to be 4.2653, 4.3032, 4.2776, 4.2899 and 4.3146% respectively with the mean value was found 4.290%. The percent quantities of replicated protein samples that were collected from Sanwaliyaji District Chittorgarh (Rajasthan) were found to be 3.5756, 3.5999, 3.5878, 3.6121, and 3.6243 respectively with mean value was found 3.600%. Similarly, the different quantities of percent protein samples were collected from Dakor District Kheda (Gujarat). These quantities were 5.5049, 5.5174, 5.5550, 5.5300, 5.5424 % and their mean value was 5.530%. Mandsaur and Dakor were most suitable places where quantity of soluble proteins was also more but low quantity of soluble protein presented in samples of Chittorgarh, Sanwaliyaji and Ratlam.

Keywords: *Ailanthus Excels,* Anti-cancer, Anti-diabetic, Soluble proteins

DETERMINATION OF METABOLITES QUANTITY AND ANTIMICROBIAL ACTIVITY IN BARK OF *ZIZIPHUS MAURITIANA* PLANT

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ABSTRACT

Metabolic contents of the plants formed during metabolic activities. These metabolites have been showed various pharmacological activities; hence these are used for the development of new medicines. The bark of *Ziziphus mauritiana* has different metabolites in which alkaloids, flavonoids, glycosides, phenol, lignins, saponins, sterols and tannins present in it. The quantities of primary metabolites were extracted from dried bark and estimated by quantitative method. The estimated quantity of soluble proteins was 180µg/ml, carbohydrates 31.0 µg/ml and deoxyribonucleic acid 40µg/ml. The microbial activities were also done with two bacterial strains that were *Bacillus cereus* (MTCC-1840) and *Arthrobacter viscosus* (MTCC-22) against ethyl acetate and methanolic extracts of dried bark. 10 mm zone of inhibition was appeared in ethyl acetate extract against Bacillus cereus (MTCC-1840) while *Arthrobacter viscosus* (MTCC-22) showed least activity in which 6 mm zone of inhibition developed with *B. cereus* and also 6 mm zone of inhibition showed with *A. viscosus*.

Keywords: Metabolites, DNA, *Ziziphus mauritiana*

SEASONAL EXAMINATION OF PHYSIOCHEMICAL PARAMETERS OF TWO FRESH WATER RESERVOIRS AT MANDSAUR, M. P (INDIA)

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ABSTRACT

The present study was aimed to investigate the seasonal variation of surface water of Retam barrage and Gadgil Sagar near Mandsaur, M. P (India). Water samples were collected in two reservoirs on seasonal basis during 2016-2017 and evaluated for temperature, pH, turbidity, alkalinity, total dissolve solids (TDS), chloride, nitrate, $CaCO_3$ (TH), calcium, magnesium, iron, manganese, fluoride and sulfate. Results indicate that the TDS was exceeded the permissible limit of BIS standards in summer, spring and winter seasons while $CaCO_3$ (TH), chloride, calcium, and magnesium quantities were high of both places (Retam barrage and Gadgil Sagar) in each season. The results indicate that both basins can be used for the production of potable water during all seasons but only with aprior treatment.

Keywords: Seasonality, Surface waters, Retam barrage and gadgil sagar, Water quality

DETERMINATION OF TOXIC EFFECT OF *L. CAMARA* LINN. ON CHIRONOMUS LARVAE FOR STRESS GENE

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ABSTRACT

The cold percolation method is one of the effective methods for the extraction of primary and secondary metabolites. Four solvents i.e. hexane, chloroform, methanol, and distilled water were used for the extraction of secondary metabolites from leaves of *Lantana camara*. The phytochemical screening of leaves of *L. camara* was done. In the solvent of methanol, alkaloids, flavonoids, glycosides, phenol, lignins, sponins, sterols and tannins presented in the screening analysis of *L. camara*. Methanol and distilled water are effective solvents that have the capacity to extraction of secondary metabolites in 48 h while chloroform is mild solvent for extraction of secondary metabolites from plant's parts. The *L. camara* leaves also showed toxic effect against termites, hence, its solution was used for the determination of toxic effect on larvae's body. 2% *Lantana camara* solution was mixed with food and treated then larvae were stained with X-gal dye and found blue color complex in salivary gland where heat shock proteins generate. HSPs reacted with this dye and made blue colour complex.

Keywords: *Lantana camara,* Secondary metabolites, Termites

PREPARATION AND CHARACTERIZATION OF MUCOADHASIVE CHITOSAN MICROSPHERE OF SULFASALAZINE BEARING INFLAMMATORY BOWEL DISEASE

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ABSTRACT

Inflammatory bowel disease (IBD) is a term that refers to polygenic disorder that present itself to the clinical as a sum of interacting event arising from multiple factors of genetic, immunological and environment origin, resulting in chronic relapsing inflammation that itself manifest into two major forms Ulcerative Colitis (UC) and Crohn's disease (CD). Crosslinked Chitosan microspheres were prepared using emulsion method employing glutaraldehyde as croslinker. This method provides micron size range with spherical shape and uniformity in size and used for hydrophilic and hydrophobic drugs to be encapsulated in a polymer matrix. This method was applied to formulate microspheres of sulfasalazine into chitosan. The prepared formulation was optimized for various parameters like chitosan concentration, drug-polymer ratio, surfactant concentration, stirring time, stirring speed obtain microspheres with maximum drug entrapment. The scanning electron photomicrograph (SEM) of optimized formulation reveals that the microspheres were spherical with smooth texture. *In vitro* release study of sulfasalazine loaded chitosan microspheres showed % cumulative drug release in PBS (pH7.4)87.4, SIF (pH6.8)93.3, SGF (pH1.2)89.3 up to 24 h. A significant decline in the % cumulative release rate of Sulfasalazine from chitosan microspheres was observed.

Keywords: Microspheres, Chitosan, Sulfasalazine, Single emulsification method, Glutaraldehyde, *In vitro* release study

FUTURE OF HERBAL COSMETICS

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ABSTRACT

Herbal cosmetics are also referred to as natural cosmetics. Herbal cosmetics are the products in which herbs are used in crude or extract form. Herbal cosmetics are prepared, using permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to treat different skin ailments and for the beautification. The chemical formulation of all these cosmetic products includes addition of various natural additives like waxes, oils natural color, natural fragrances and parts of plants like leaves, etc. The cosmeceuticals are agents that lie somewhere between pure cosmetics (lipstick and rouge) and pure drug (antibiotics, corticosteroids). The cosmetic products are the best option to reduce skin problems such as hyper pigmentation, skin wrinkling, skin aging and rough skin texture etc. The demand of herbal cosmetic is rapidly expanding. Herbal cosmetic has a great future ahead as compared to the synthetic cosmetics. The markets of all trades are expanding day by day. In time of recession along with some vital sectors the cosmeceutical sector also shows growth. Herbal cosmetic industries are fast growing among the pharmaceuticals. The reason for its appreciable growth could be increased demand and lesser side effects in comparison to synthetic products. Herbal cosmetics have demand in developed as well as in developing countries. India can generate more foreign currency by increasing its trade in herbal cosmetics. The future of herbal cosmetic industry is bright. Further, this could be one of the sectors which seem helpful to reduce the problem of unemployment

Keywords: Herbs, Cosmeceuticals, Skin ailments

INFRARED ASTRONOMY: ASTROPHYSICS

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ABSTRACT

Infrared astronomy is the branch of astronomy and astrophysics that studies astronomical objects visible in infrared (IR) radiation. The wavelength of infrared light ranges from 0.75 to 300 micrometers. Infrared radiations fall in between visible radiation, which ranges from 380 to 750 nm and submillimeter waves.

Various types of celestial objects including the planets of the solar system, stars, nebulae, and galaxies give off energy at wavelengths in the infrared region of the electromagnetic spectrum (i.e., from about one micro meter to one milli meter). The techniques of infrared astronomy enable investigators to examine many such objects that cannot otherwise be seen from the Earth because the light of optical wavelengths that they emit is blocked by intervening dust particles.

Infrared and optical astronomy are often practiced using the same telescopes, as the same mirrors or lenses are usually effective over a wavelength range that includes both visible and infrared light. Both fields also use solid state detectors, though the specific type of solid state detectors used are different. Infrared light is absorbed at many wavelengths by water vapor in the Earth's atmosphere, so most infrared telescopes are at high elevations in dry places, above as much of the atmosphere as possible. There are also infrared observatories in space, including the Spitzer Space Telescope and the Herschel Space Observatory.

Keywords: Infrared astronomy, Telescope

THE POWER OF PURPLE FOOD: ANTHOCYANINS FOR CANCER, BLOOD SUGAR, AND BRAIN HEALTH

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ABSTRACT

All brightly colored fruit and vegetables contain antioxidants compounds which play a key role in protecting our bodies but many naturally purple-colored foods contain a certain antioxidant called anthocyanin. While studies are ongoing, it's too early to say conclusively whether anthocyanins deserve the recent media headlines that label purple foods as 'Superfoods'. Previous research has linked anthocyanins to a wide variety of health claims, including increased cardiovascular health, cancer prevention and dementia.

Anthocyanins are colored water-soluble pigments belonging to the phenolic group. The pigments are in glycosylated forms. Anthocyanins responsible for the colors, red, purple, and blue, are in fruits and vegetables. Red to purplish blue colored leafy vegetables, grains, roots, and tubers are the edible vegetables that contain a high level of anthocyanins. Among the anthocyanin pigments, cyanidin-3-glucoside is the major anthocyanin found in most of the plants. The colored anthocyanin pigments have been traditionally used as a natural food colorant. Besides the use of anthocyanidins and anthocyanins as natural dyes, these colored pigments are potential pharmaceutical ingredients that give various beneficial health effects. Scientific studies, such as cell culture studies, animal models, and human clinical trials, show that anthocyanidins and anthocyanins possess antioxidative and antimicrobial activities, improve visual and neurological health, and protect against various non-communicable diseases.

Keywords: Anthocyanin, Purple food, Colorant, Disease, Health benefit, Pigment

NOVEL ROLL-ON FORMULATIONS FOR TREATMENT OF ONYCHOMYCOSIS

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ABSTRACT

Transungal therapy is desirable in treatment of onychomycosis since it involves delivery through nail plate. Present study focuses effective delivery of sertaconazole nitrate for the treatment of onychomycosis. To improve the residence time of drug along with effective drug delivery and also overcome disadvantages associated with nail lacquers, a novel "Roll on drug delivery" system was prepared. Incorporation of sertaconazole nitrate into roll-on systems was done as microemulsions to enhance solubilisation and permeation. Preapared self–microemulsifying system was evaluated for appearance, stability, drug content,particle size and zeta potential. The roll-on systems were evaluated for drying time, gloss and peelability, drug content, smoothness to flow, *in vitro* drug release and stability testing.

Roll-on systems with microemulsions was found to be acceptable in all evaluation parameters, offering an alternative novel drug delivery system for treatment of onychomycosis.

Keywords: Setaconazole nitrate, Self microemulsifying drug delivery, Onychomycosis, nail lacquer, Roll-on drug delivery, Novel drug delivery systems

DESIGN, SYNTHESIS AND CHARACTERIZATION OF HYBRID UREA/THIOUREA DERIVATIVES AS A POTENTIANL ANTIDIABETIC

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ABSTRACT

Type 2 diabetes mellitus (T2DM) presents a major challenge to healthcare system around the world. The prevalence of diabetes is rising all over the world due to population growth, aging and urbanisation. Urea and thiourea derivatives possess many promising biological activities such as antifungal, anticancer, antimicrobial, anticonvulsant etc.

Urea/thiourea derivatives have been synthesized and screened for the antidiabetic activity. The synthesized compounds (5a-5f) were characterized by FT-IR, NMR, Mass spectroscopy and evaluated for their both *in vitro* and *in vivo* antidiabetic activity. The *in vitro* antidiabetic activity was done by α-glucosidase inhibitory activity of synthesized compounds. The *in vivo* antidiabetic activity was performed on streptozotocin induced diabetic Swiss albino rats. The Blood glucose level, different enzymatic studies and lipid profile of the studied animal were estimated.

The results indicated that among the series, compound 5d showed potent α-glucosidase inhibitory activity which is supported by *in vivo* antidiabetic study.

It may be concluded that hybrid urea/thiourea derivatives will be a new class of antidiabetic compound in future.

Keywords: Diabetes mellitus, Urea/thiourea, α-glucosidase inhibitor, Antidiabetic activity

ANTICANCER POTENTIAL OF 2, 4, 6 TRISUBSTITUTED PYRIMIDINE DERIVATIVES

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ABSTRACT

In 2015, about 90.5 million people had cancer. Diet, physical inactivity and obesity are related to up to 30–35% of cancer deaths. Cancer prevention is defined as active measures to decrease cancer risk. Chemotherapy is the treatment of cancer with one or more cytotoxic anti-neoplastic drugs (chemotherapeutic agents). The pyrimidine ring system has wide occurrence in nature as substituted and ring fused compounds and derivatives. The literature survey indicated that various analogs of pyrimidines have been found to possess antibacterial, antifungal, anti-inflammatory, antihypertensive, antiviral, antidiabetic, antioxidant, anticancer and calcium channel blockers. Now a day there is a great interest in synthesis and characterization of Chalcone ligands.

A number of substituted pyrimidine derivatives (1-6) were synthesized from the various substituted chalcone moieties. The structures of the compounds have been confirmed by NMR and IR spectroscopy. The *in vivo* anticancer study of the synthesized compounds was investigated in swiss albino mice against 5-Fluorouracil. The anticancer activity of the synthesized compounds was done on the basis of change in haematological parameters (RBC, WBC, Hb), percentage of tumour weight inhibition (%TWI), percentage of tumour cell count inhibition (%TCI), change in body weight. The compounds showed significant activity to retard cancer cell growth.

The result of the investigation encourages us to develop analogues and test them against various cancer models to develop more potent drugs which will act more specifically.

Keywords: Anticancer potential, Pyrimidine derivatives

Poster Presentation

EVALUATION OF ANTI-DIABETIC PROPERTIES OF SELECTED MEDICINAL PLANTS

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ABSTRACT

Diabetes is one of the global concerns, that has gained focus by many fields of medicines. It is a chronic disorder, where sugar metabolism is disturbed, in such a way that the person may suffer from abnormally high or low levels of blood sugar. It is caused by numerous factors like lack of insulin secretion by β cells of pancreas, insulin resistance (hyperinsulinemia), obesity, lifestyle, stress etc. one of the WHO report on diabetes demonstrated that the number of adults living with diabetes has almost quadrupled since 1980. This increase is due to the changing life style and diet habits. In 2012 diabetes has caused 1.5 million deaths and the numbers are in progression since then. Based on the above figures, the current work focuses on the study of antidiabetic activity of various, general medicinal plants that we come across commonly in day to day life. In developing countries like India, lack of knowledge and illiteracy is one of the major factor that deaths occur due to improper administration of medication. The conventional method to counter diabetes is the use of insulin, which in wrong concentrations can have antagonistic effects. Thus, the focus of work is to device a way where by the administration of common medicinal plants diabetes can be brought to control. The aqueous extracts from plants-*Gymnema sylvestre, Adhatoda vasica, Syzigium cumini, Trigonella foenum* and *Curcuma longa* were selected and analyzed for their antidiabetic activities, by different assays like toxicity testing, phytochemical analysis, non-enzymatic glycosylation assay in hemoglobin, amylase inhibition assay. From all the parameters evaluated, *G. sylvestre* showed a significant result for non-enzymatic glycosylation assay, inferring the ability to enhance the glucose uptake by tissues from the blood, reducing the blood sugar levels. Amylase inhibition assay revealed a drop to 68 % in the total amylase activity by the extract of *S. cumini*. Thus, a decoction of these plants extract can help to counter diabetes and related disorders like hyperinsulinemia, HHNS, etc.

Keywords: General medicinal plants, Decoction, Hyperinsulinemia, HHNS

VIRGIN COCONUT OIL IMPROVES LEARNING AND MEMORY

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ABSTRACT

Present study was designed to investigate potential effects of Virgin Coconut Oil (VCO) on learning and memory. VCO has been reported to posses various pharmacological activities like Cardioprotective, hepatoprotective, anti diabetic, pancreatoprotective, anti oxidant, anti hypercholesterolemic, anti hypertensive, analgesic, anti pyretic and anti inflammatory. Wistar rats were used in the study. The animals were divided in four groups. Each group consisted of 5 animals. Morris Water Maze, Elevated Plus Maze and Novel Object Recognition Test (NORT) was used to evaluate cognitive enhancing activity of VCO in rats. VCO 5g/kg and VCO 10g/kg were administered. Alpha Tocopherol was used as standard drug. Results were expressed as mean±standard error of the mean, and the statistical analysis of data was done using one-way analysis of variance followed by Dunnett's test. VCO 5g/kg and VCO 10g/kg showed significant improvement in learning and memory in all three behavioural models. In Morris Water Maze, VCO treated rats showed shorter transfer latency to platform, longer time spent on platform, longer time spent in platform quadrant and shorter time spent in other quadrants. In EPM, rats treated with VCO showed significant reduction in transfer latency. In NORT VCO treated rats showed higher time spent with novel object and better discrimination for familiar and novel object. The results suggested that VCO 5g/kg was sufficient enough to establish improvement in learning and memory in rats.

Keywords: Elevated plus maze, Morris water maze, Novel object recognition, Learning and memory, Alzheimer's disease

SCREENING OF ALCOHOLIC AND AQUEOUS EXTRACTS OF *MUSSAENDA ERYTHROPHYLLA* (RUBIACEA) IN ALBINO RATS; FOR ITS DIURTIC ACTIVITY

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ABSTRACT

The traditional systems of treatment such as Ayurveda, Unani, and Siddha, western herbal medicine, traditional Chinese medicine and homeopathy use herbs for the treatment. Many researchers has prescribed about the importance of herbal medicine in the treatment of various diseases and because of the accessibility and cost effectiveness herbal treatment is still in practice by large number of practitioners. *Mussaenda erythrophylla* (Rubiacea) plant was reported to possess a number of medicinal properties including used for cough, jaundice, showed hepatoprotective effects, antihelmintic activity, appetite stimulant activity and also has anti-oxidant. The present study was investigated the diuretic activity of plant alcoholic and aqueous extracts of *Mussaenda erythrophylla*. It was carried out by using method at the dose of 200 and 400 mg/kg and compared with Furosemide (standard) at 20 mg/kg. Alcoholic and aqueous plant extracts were showed significant 3.69±0.12 and 5.37±0.20 (*P<0.01*) increase in the urine at 400 mg/kg, respectively when compared with standard group i.e. Furosemide 3.95±0.26 and 7.91±0.38 at 20 mg/kg at 5hr and 24hr. However alcoholic and aqueous plant extracts were showed significant increased urinary concentration of sodium, potassium and chloride 106.18±5.28, 74.33±2.14 and 119.74±4.49 (*P<0.01*) at 400 mg/kg 7.917±0.38 at 24 hr when compared with that of Furosemide (20 mg/kg) 127.92±2.11, 88.01±1.69 and 149.06±7.65 respectively. This result revealed that alcoholic plant extract showing more significant diuretic activity when compared to aqueous plant extract. It may be possess triterpenoids, glycosides, and flavonoids and sugars may play role in diuretic activity.

Keywords: Diuretic, *Mussaenda erythrophylla*, Lipschitz

LEPIDIUM SATIVUM: A NOVEL PHARMACEUTICAL EXCIPIENT

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ABSTRACT

Natural excipients are preferred over synthetically processed because of better patient compliance, cost effectiveness, less processing steps and being environmental friendly. *Lepidiumsativum*is also known as 'Aliva' in Marathi and garden cress in English, contains a high proportion of mucilage. The present study focuses on the suitability of *Lepidium sativum* as a pharmaceutical excipient. The focus was given on finding the application of *Lepidium sativum* as a disintegrant, a binder and also as a matrixing agent to retard the release of drug. In each case suitable physicochemical properties were evaluated and also compared with respective standard agent from that category. It's suitability as disintegrating agent was compared with sodium carboxymethyl cellulose, sodium starch glycolate and starch at different hardness parameters i.e. 2, 4, 6 kg/cm^{2}in concentrations of 1%, 2.5% and 5%. As a binder, it was compared with gelatin, maize and potato starch in concentrations of 5% w/v. As matrixingagent, it was compared with hydroxypropyl methylcellulose, in ratios of drug: polymer (1:1 and 1:2). It was seen that as a disintegrant it was comparable to the standard disintegrant but not with superdisintegrants. As a binder it was comparable with the standard binder with acceptably hard tablets and as matrixing agent, in few cases when the drug is hydrophobic it is comparable to hydroxypropyl methylcellulose but for hydrophilic drugs and high doses,it was not at par with standard. Thus it can be concluded that *Lepidium sativum* can be useful as a novel natural polymer in pharmaceuticals.

Keywords: *Lepidium sativum*, Excipient, Disintegrating agent, Binder, Matrixing agent

INSIGHT INTO SELF-MEDICATION DEMEANOR AMONG PEOPLE WORKING IN PRIVATE SECTOR IN AN URBAN POPULATION

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ABSTRACT

Being a topic meagerly explored among the targeted population, this study was aimed to assess the patterns and preferences of self medication (SM) practices among people working in private sectors in an urban setup. A community based, observational study wherein 108 subjects from an urban population were identified who worked in private sectors and were provided with a semi-structured, self-made and pre-validated questionnaire. Data from the response sheets was transcribed into MS Excel and analyzed using SPSS software version 20.0 by multiple logistic regression. Analyzed results brought out allopathy (84.25%) as the most preferred system of medicine for SM among the study participants followed by home remedies (32.4%). The most common indication against which SM was employed was fever (74.07%) followed by headache (50.92%) and bodyache (50.92%). Acetaminophen was the chiefly used drug in SM against various indications. Among home remedies, clove (n=20) for toothache was most widely used. Most common source of information regarding SM was acquaintances (76.85%)[OR=2.079; 95% CI(1.201-3.573), p=0.005]. Advertisements (8.33%) [OR=0.495; 95% CI (0.223-1.097), p=0.055] as source of SM within the population was also notably significant. Although considering one's ailment as minor (26.85%) [OR=0.473;95% CI(0.281-0.797), p=0.003] was the reason for resorting to SM with statistical significance, a need for quick relief from the ailment (46.29%) remained the most common reason for the same. Majority of the population (79.62%) [OR=2.753; 95%,CI(1.443-5.253), p=0.002] said that they do check the expiry dates of products before using them for SM while a minor (4.96%) [OR=0.363; 95%, CI(0.190-0.693), p=0.002] yet significant population said that they don't. In a profession focused age with media playing an important role in healthcare field, the need for a quick remedy steers the population of developing countries towards self-medication. Although an essentially wide-spread practice, SM is an aspect of modern healthcare which needs a cautious approach to encourage the practice with safety and responsibility. While the knowledge regarding SM among the population seems promising, its escalating trend demands a more comprehensive awareness.

Keywords: Self medication, Home remedies, Health care

FORMULATION DEVELOPMENT OF LOW SOLUBILITY DRUG SUBSTANCE BY SOLID DISPERSION TECHNIQUE

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ABSTRACT

Tamoxifen citrate {(Z)-2-[4-(1,2-diphenylbut-1-enyl)-1-phenoxy]ethyldimethylamine citrate} is an anticancer drug classified under the class II of biopharmaceutical classification system (BCS). Hence, the objective of present work is to enhance solubility of tamoxifen citrate to improve its dissolution rate. In this study, solid dispersions (SDs) were prepared using three different approaches *viz.* physical mixture, melting method and solvent evaporation technique. In each method solid dispersion of the drug was prepared using poloxamer 188 as hydrophilic carrier in three ratios (1:1, 1:1.5, 1:2). Drug polymer interaction study was performed using fourier transform infrared (FT-IR) spectroscopy. Dissolution behaviours of all the prepared SDs were compared using USP apparatus I (basket method). Characterization of an optimised SD was done using FT-IR, differential scanning calorimetry (DSC), powder X-ray diffractometry (XRD) and scanning electron microscopy (SEM). The results have shown that *in vitro* dissolution rate of tamoxifen citrate was remarkably improved in optimized formulation when compared with drug alone. The SD composed of tamoxifen citrate: poloxamer 188 in a ratio of 1:1.5 was selected as the best formulation on the basis of percent cumulative drug release (% CDR). The results of FT-IR study of optimised formulation showed no interaction of the polymer with the drug. Results of DSC, XRD and SEM showed the loss of crystallanity of drug into an amorphous form. From the above results it can be concluded that solid dispersion prepared by solvent evaporation method using poloxamer 188 shows better results for enhancement of solubility and dissolution rate.

Keywords: Dissolution rate, Tamoxifen citrate, Solvent evaporation method, Poloxamer 188, Solid dispersion

EFFECT OF NOVEL PROCESSED SUPERDISINTEGRANTS ON ORAL DISPERSIBLE TABLET OF DICLOFENAC SODIUM

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ABSTRACT

Co-processing is an alternate way that new excipients are coming to market without experiencing the thorough wellbeing testing of a totally new chemical. It could be characterized as consolidating two or more settled excipients by a fitting procedure. Co-processing of excipients could prompt the development of excipients with better properties thought about than the basic physical mixtures of their components. In the present study the novel co-processed Superdisintegrants were prepared by solvent evaporation method. A blend of Croscarmellose sodium and sodium starch glycolate in the ratio of 1:1, 1:2 and 2:1 prepared and evaluated for Bulk density, Tapped density, Carr's Index and Angle of repose. In the present study Diclofenac sodium used as a model drug. Tablets were prepared by direct compression technique using novelco-processed Superdisintegrants and evaluated for thickness, weight variation test, drug content, hardness, friability and *in vitro* drug release studies. Among the various formulations of fast dissolving tablet of Diclofenac sodium, the formulation containing 4% w/w of co-processed Superdisintegrants sodium starch glycolate and Croscarmellose sodium in 1:1 Proportion is the best formulation having least time for tablet disintegration.

Keywords: Superdisintegrants, Crospovidone, Diclofenac sodium

INCIDENCE OF ADVERSE DRUG REACTIONS DUE TO INAPPROPRIATE PROTON PUMPINHIBITORS USE: A PROSPECTIVE STUDY

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ABSTRACT

Proton Pump Inhibitors (PPIs) are commonly utilized for gastric acid related disorders. PPIs are overuseddue toincreased efficacy, availability as Over-the-Counter (OTC) medications, co-prescription of PPIs as prophylactic drugwith antibiotics andother drugs. This can increase the incidence of Adverse Drug Reactions (ADRs) and cost burdenthereby decreasingthe patients Quality of Life (QoL). This study assesses the incidence of ADRs associated with PPIs. This is a prospective observational study conducted over a period of 6 mo on inpatients and outpatients aged above 18 y using PPIs for more than 4–6 w. The patient data was collected utilizing medical records, patient interviews and was transcribed into specially designed data collection form. The causal relationship of ADRs was assessed using Naranjo Scale. A total of 113 patients with inappropriate PPI use were studied. The commonly used PPIs included pantoprazole 48 (38.1%), followed by esomeprazole 17 (13.49%), omeprazole 16 (12.7%), rabeprazole 14 (11.11%), lansoprazole 1 (0.79%) and dexlansoprazole 1 (0.79%). Among the total study subjects, 51 (45.13%) showed at least one possible ADRaccording to Naranjo scale. The common ADRs were headache 28 (32.56%) and constipation 17 (19.77%). Rare ADRs such as PPI induced polyps 5 (5.81%), hypocalcemia8 (9.30%), anemia 6 (6.98%) and vitamin B_{12} deficiency 2 (2.33%) were also observed. This study demonstrates that short term and long term inappropriate use of PPIs can lead to incidence of ADRs.

Keywords: Proton pump inhibitors, Adverse drug reactions, Quality of life

EVALUATION OF CARDIOPROTECTIVE EFFECT OF ETHANOLIC EXTRACT OF *ABELMOSHCUS ESCULENTUS* ON DOXORUBICIN INDUCED CARDIOTOXICITY IN RATS

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ABSTRACT

Doxorubicin is a potent anticancer agent and has broad spectrum antitumor activity but its clinical use is limited for its dose dependent cardio toxicity. The present study was take up to evaluate the possible protective effect of ethanolic extract of *Abelmoshcus esculentus* against doxorubicin (DOX) induced cardiotoxicity in rats. In this experiment, 20 Wistar albino rats (250 g) were divided into five groups (n = 4). Control group received distilled water for 10 d. DOX treated group received vehicle for 10 d. The remaining three groups received vitamin C and ethanolic extract of *Abelmoshcus esculentus* (100 and 200 mg/kg, p. o.) for 10 d. Cardiotoxicity was induced by administration of single dose of DOX (10 mg/kg i. p.) on 7th day of study. Various biochemical parameters are estimated in serum and heart tissue which includes Creatinine kinase (CK-MB), lactate dehydrogenase (LDH), reduced glutathione (GSH), Super oxide dismutase (SOD) and catalase (CAT) and along with histopathological studies. DOX treated rats showed a significant increase in myocardial tissue damage markers such as Creatinine kinase (CK-MB), Lactate dehydrogenase (LDH) and significant declines in the levels of reduced glutathione (GSH), Super oxide dismutase (SOD) and catalase (CAT). All biochemical changes which are brought to normal after oral administration of ethanolic extract of Abelmoshcus esculentus at doses 100 and 200 mg/kg, p. o for 10 d. Moreover, in this study, we have found that oral administration of *Abelmocshcus esculentus* prevented DOX-induced cardiotoxicity by accelerating heart antioxidant defense mechanisms and memebrane stabilizing effect.

Keywords: *Abelmoshcus esculentus* extract, Doxorubicin, Cardiotoxicity, Myocardial injury markers, Antioxidants, Histopathology

STUDY ON ETHANOLIC EXTRACT OF *ARTEMISIA NILAGIRICA* ON NEURODEGENERATIVE DISEASES

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ABSTRACT

Oxidative stress plays an important role in the pathogenesis of neurodegenerative diseases such as Alzheimer's and Parkinson's disease. Inhibition of acetylcholinesterase (AChE), the key enzyme in the breakdown of acetylcholine, is considered as a promising strategy for the treatment of neurological disorders such as Alzheimer's disease, senile dementia, ataxia and myasthenia gravis. A potential source of AChE inhibitors is certainly provided by the abundance of plants in nature. Flavonoids exert their antioxidant effects by neutralizing all types of oxidizing radicals including the superoxide and hydroxyl radicals. *Artemisia nilagirica* (Clarke) is an important plant used in Ayurveda for the treatment of various disorders of the CNS and is a rich source of flavonoids, glycoside and terpenoids. In the present study, we investigated the antioxidant, antiparkinson and memory enhancing activity of ethanolic extract of Artemisia nilagirica (EEAN). Antioxidant activity was assessed using DPPH and hydrogen peroxide scavenging assay. The antiparkinson activity was evaluated using chlorpromazine induced catalepsy and memory enhancing activity was assessed using elevated plus maze and object recognition test. The results were analyzed by Analysis of Variance test followed by Dunnett's test. Administration of EEAN decreased transfer latency on day 2 and 9 significantly in elevated plus maze test and showed a significant increase in discrimination index in the object recognition test which is suggestive of its cognitive improvement action. Pretreatment with EEAN showed a significant reduction in the chlorpromazine induced catalepsy which are suggestive of its antiparkinson activity. In DPPH and H_2O_2 scavenging assay, EEAN exhibited significant free radical scavenging activity. It can be concluded that the ethanolic extract of *Artemisia nilagirica* (Clarke) leaf and flowering top has significant antiparkinson and cognition enhancing activity which may be associated with its antioxidant potential. Thus ethanolic extract of *Artemisia nilagirica* (Clarke) leaf and flowering top may be employed in treatment of CNS disorders.

Keywords: Antioxidant activity, CNS activity, *Artemisia nilagirica* (Clarke)

ASSESSMENT OF THE ANTI-TUBERCULAR ACTIVITY OF SELECTED INDIAN MEDICINAL PLANTS

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ABSTRACT

Tuberculosis (TB) is a global burden with one–third of the world's population infected with the pathogen *Mycobacterium tuberculosis* complex and annually 1.4 million deaths occur due to the disease. This high incidence of infection and the increased rate of multi-drug resistant and extensively-drug resistant strains of the organism further complicated the problem of TB control and have called for an urgent need to develop new anti-TB drugs from plants. Plants are the important source of diverse range of bioactive principles. The revival of interests in plant derived drugs is mainly due to the current widespread belief that green medicine is safe and more dependable than expensive synthetic drugs, which have adverse side. In this study, the *In vitro* antituberculosis activity of root of *Leptedinia reticulata and whole herbof Cocculus hirsutus* were evaluated against non-pathogenic strain of Mycobacteria i.e. *M. smegmatisusing two different* quantitative *In vitro assays.* The Alamar blue Assay and MGIT (Mycobacterium Growth Indicator Tube) assay were designed to measure thenumber of viable bacteria. Alcoholic, Hydro-alcoholic and Aqueous extracts were prepared from the selected plants. Various concentrations of the extracts were screened for anti-TB activity in both the *In vitro* assay. The results of both the assay suggest that Aqueous extracts of both the plants showspotent anti-TB activity when compared with standard. It can be concluded that the present study provided a scientific support for the traditional use for the treatment of tuberculosis.

Keywords: Tuberculosis, *Mycobacterium Smegmatis*, Alamar blue assay, MGIT

DESIGN AND DEVELOPMENT OF ANTIRETROVIRAL DRUG DELIVERY SYSTEM

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ABSTRACT

Antiretroviral drugs having lots of limitations regarding dosage formulation and drug complexity. Most of these drugs bear some significant drawbacks such as relatively short half-life, low bioavailability, poor permeability and undesirable side effects. Effects have been made to develop such dosage forms for antiretroviral agents to reduce the dosing frequency, increase the bioavailability and decrease the degradation in the GIT tract, improve the CNS penetration and inhibit the CNS efflux and deliver them to the target cells selectively with minimal side effects. As per literature review various systems such as SLS forms, Nanodiamonds, Combinational dosage forms, sustained release tablets, ceramic implants, nanoparticles, liposomes, emulsions, aspsome, microemulsion, nanopowder, transdermal patches and pheroids, Injectable are summarized. This review highlights the significant potential thattargeted drug delivery systems have for the future effective treatment of HIV/AIDS patients on ARV drug therapy. After thorough review of literature we wereselected Carbidopa as antiretroviral drug as study object. Preformulation study performed where following parameters included like pH, solubility, Coefficient, conductivity, Drug excipient comparability, Stability Study. Weare Proceeding formulation and evaluation of the transdermal drug delivery systems utilizing ethosome concept with solvent evaporation techniques for antiretroviral drugs.

Keywords: HIV/AIDS, Novel drug delivery systems, Antiretroviral drugs, Transdermal patches

COMPARATIVE PHARMACOLOGICAL STUDY OF DRAKSHASAV AND HYDRO-ALCOHOLIC PREPARATIONS OF GRAPES AND RAISINS

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ABSTRACT

The current study was carried out to compare the pharmacological effects of aqueousextract of raisins, red wine and the ayurvedicpolyherbal preparation Drakshasav. *In vitro* antioxidant test of DPPH free radical scavenging activity was carried out onthe test samples. In the *in vivo* animal models, effect on learning and memory wasinvestigated using Morris water maze for spatial learning and memory and probe memory, motorskill learning on accelerated rotarod, olfactory learning and novel object recognitiontest. The dependence ability of the test samples was assessed by models of addictionnamely free-choice-bottle test and operant self-administration test. Wistar albino rats were divided into five groups, which were given distilled water, piracetam (200 mg/kg), aqueous extract of raisins (125 mg/kg), red wine (4 ml/kg), Drakshasav (1.2 ml/0.2 kg), respectively. *In vitro* test indicated that aqueous extract of raisins showed higher antioxidant capacity as compared to red wine followed by Drakshasav. Aqueous extract of raisins improved spatial learning and memory and probememory, it also showed improvement in motor skill, olfactory learning and novelobject recognition tests. Drakshasavshowed improvement in spatial memory and long-term memory in novel object recognition tests. Red wine showed good results for olfactory learning and long-term memory in novel object recognition test, but has a high tendency to cause dependence as compared to other products hence its use should be properly monitored. It can be thus concluded that all the three test products have effect on the

POLYMERIC NANOPARTICLES FOR siRNA DELIVERY FOR CANCER THERAPY

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ABSTRACTS

RNA interference (RNAi) is an endogenous post-transcriptional gene regulatory mechanism. Gene silencing using small interfering RNA (siRNA) is an important RNAi tool that has found significant application in cancer therapy. However due to lack of stability, poor cellular uptake and high probability of loss of function due to degradation, siRNA therapeutic strategies seem for safe and efficient delivery vehicles for *in vivo* applications. This paper discusses various nanoparticle systems currently used for siRNA delivery for cancer therapy, with emphasis on nanoparticles based siRNA delivery systems. The discussion also includes various methods availed to improve nanoparticle based siRNA delivery with target specificity and superior efficiency. Multifunctional NPs can be engineered using several types of carrier systems. Nanoparticles formulated using the biodegradable polymeric NPs involved the use of synthetic polymers such as, poly (d,l-lactide-*co*-glycolide) (PLGA) for siRNA delivery. A cationic polymer, polyethylenimine (PEI), was incorporated in the PLGA matrix to improve siRNA encapsulation in PLGA nanoparticles.

Keywords: RNA interference, Gene regulatory mechanism, PLGA nanoparticles

CHARACTERISATION OF *SARAKA ASOCA* FLOWER (ROXB.) WILDE WITH ITS LEARNING AND MEMORY ENHANCING ACTIVITY IN EXPERIMENTAL MICE

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ABSTRACT

Ethanopharmacological relevance*: Saraka asoca* flower (Roxb) Wilde has been widely used in India as uterine tonic, anti-diabetic and combination of flower and bark are used to treat some neurological disorders in Ayurvedic medicine.

To focus on the analysis of chemical constituents of the *Saraka asoca* flower (Roxb.) Wilde and to evaluate the effect of ethanolic extract on learning and memory enhancing activity in experimental mice. Methanol fractions of ESAF were analytically characterized by Liquid Chromatography-Mass Spectrometry (LC-MS) and High performance liquid chromatography (HPLC). EASF in the doses 50, 100 mg/kg body weight were administrated to albino mice by oral route followed by evaluation of memory enhancing activity as per the intended standard protocols such as Elevated plus maze and Morris water maze. The results are expressed as mean±SEM Statistical analysis was done by One-way ANOVA test followed by Post-hoc Dunett's multiple comparison test. $P<0.05$ was considered statistically significant. Characterisation of methanol fractions of ESAF showed the presence of bioflavonoids namely, myricetin, behaviour, and rhamnazin. In animal models, EASF 50 and 100 mg/kg and Piracetam (100 mg/kg) administered orally for 7 d protected the animals against scopolamine-induced learning and memory impairment. In Morris water maze test, ESAF treated mice exhibited reduced time of escape latency and, ESAF 100 mg/kg showed significant difference compared to control indicating its learning and memory enhancing potential. Ethanolic extract of *Saraka asoca* flower showed presence of various bioflavonoids like, Myricetin and Rhamnazin. EASF extract (100 mg/kg) administrated orally for 7 d improved learning and memory of mice assessed by behavioural models like elevated plus maze and Morris water maze.

Keywords: *Saraka asoca* flower, Elevated plus maze, Morris water maze

DEXTRAN SULFATE STABILIZED SILVER NANOPARTICLE: NEXT GENERATION EFFICIENT THERAPY FOR CANCER

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ABSTRACT

Cancer cases have increased rapidly in recent years. An efficient therapy for cancer cells may help to improve the quality of life of cancer patients. The current scenario among pharmaceutical companies is to produce targeted drug delivering mechanism. Many natural occurring polymers can carry drugs to the targeted area, but a proper competitive binding is needed between the polymer and the therapeutic agent. Hence an attempt has made to produce a therapeutic agent encapsulated with a biopolymer which may act as a nanocarrier to the fixed target. Since Silver nanoparticles have a good antibacterial and anti-fungicidal effect it has been chosen as therapeutic agent. These Silver nanoparticles were synthesized by green route mechanism. Natural occurring polymer, particularly of an-hydroglucose type, like Dextran sulfate sodium salt is then encapsulated with the silver nanoparticles. Dextran sulfate polymer is highly biocompatible, biodegradable, and they stay for more time in the blood stream. Silver nanoparticles encapsulated in dextran sulfate exhibits an excellent anticancer activity.

Keywords: Silver nanoparticles, Biopolymer, Dextran sulfate, Anticancer activity

FORMULATION AND EVALUATION OF KETOCONAZOLEBUOYANT TABLETS

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ABSTRACT

Gastro-retentive delivery system is suitable for drugs having absorption window in the stomach. Ketoconazoleis a dibasic anti-fungal drug (pKa value: 6.51 and 2.94), with poor water solubility and it has a short elimination half-life of 2 h. It has been reported that the solubility and dissolution of ketoconazole have found to be increased in the stomach pH than in the intestinal pH conditions. Formulations of ketaconozole buoyant tablet trials were carried out using Central composite optimization design by taking HPC, Xanthan gum and sodium bicarbonate as independent variables and floating lag time, % drug release for 12 h as dependent variables respectively. The amount of HPC and Xanthan gum were found to significantly influence *in vitro* response parameters. The results of pre-compression and post-compression parameters of all the formulations were found to be within the standard limits. The optimized formulation showed slow and complete drug release up to a period of 12 h in the simulated stomach pH conditions with floating lag time of 160 sec. The results of *in vitro* drug release kinetics indicated matrix type with non-fickian as the bestt fit model. Stability studies conducted as per the ICH guidelines indicated no appreciable changes in the drug content and *in vitro* drug release profile of the optimized formulation. Thus, buoyant tablets of Ketoconazole were successfully developed for better dissolution characteristics with sustained drug actionin the stomach.

Keywords: Buoyancy, Floating drug delivery, Dissolution, Ketoconazole, Central composite design

KNOWLEDGE AND PERCEPTION OF FARMERS REGARDING PESTICIDE USAGE IN A RURAL FARMING VILLAGE, SOUTHERN INDIA

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ABSTRACT

Farmers are extensively using pesticides for pest control in agriculture. Their precarious handling practices may lead to higher exposureto pesticides resulting in adverse health effects. Hencecurrent study was aimed to evaluatethe knowledge, attitude and practices regarding pesticide usageand its toxic effectsby farmers of a village in south Karnataka, India. A cross sectional study was conducted among 171 farmers. Data collection involved usage of face to face standardized validatedquestionnaire. A total of 118 males and 53 females participated in this study with median age of 40 y. About 61% of the farmers knew the harmful effects of pesticides. However, 22% of the them were mixing the pesticides using their bare hands and 26% were not wearing any protective clothing during spraying pesticides. Around 67% were carelessly disposing the leftover pesticides in the open fields. Skin problems and neurological system disturbances were the most common pesticide related health symptoms. Equipment washing practices ($p<0.05$) and protective clothing ($p<0.03$) were significant predictors of health related problems. Significant associations were found between the occurrence of headache and equipment washing practices($p<0.03$), storage of pesticide remains($p<0.02$) and protective clothing($p<0.01$). These findings showed that knowledge level is adequate among farmers but this did not reflect in their practice. There is a need for continuous pesticide safety education along with training to the farmers regarding use of personal protective devices, personal hygiene and sanitation practices during and after application of pesticides.

Keywords: Farmers knowledge, Perception, Pesticide toxicity, South Karnataka

ANTIDIABETIC ACTIVITY OF *BAUHINIA VAHLII* Wt. AND ARN (CAESALPINIACEAE) ROOT–A BOTANICAL SOURCE FOR THE AYURVEDA DRUG *MURVA*

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ABSTRACT

The objective of the study was to determine the antidiabetic potential of *Bauhinia vahlii* Wt. and Arn. (Caesalpiniaceae) root, a botanical source for the Ayurveda drug *Murva*. Ethanol extract (EEBVR) and aqueous extract (AEBVR) of *B. vahlli* root was prepared and the antidiabetic property was evaluated against Streptozotocin (STZ)-Nicotinamide (NA) induced Diabetes Mellitus (DM). The preliminary phytochemical screening revealed the presence of phytosterols, fats, proteins, carbohydrates, saponins, phenolic compounds and tannins. Acute toxicity study was carried out for the determination of therapeutic dose. A significant increase in blood glucose, serum triglycerides (TG), total cholesterol (TC), liver malondialdehyde (MDA) levels and a significant reduction in glutathione (GSH), glycogen were observed in addition to pancreatic histopathological abnormalities in diabetic animals. The diabetic animals were supplemented with 200 and 400 mg/kg p. o of EEBVR and AEBVR for 21 d. Though both the extracts exhibited significant antidiabetic activity at the tested doses, EEBVR (400 mg/kg) exerted pronounced effect as evidenced by the significant reversal of the biochemical parameters in STZ-NA induced diabetic animals, which is also well substantiated by pancreatic histological interpretation. The study suggests that the root of *Bauhinia vahlii* possess antidiabetic activity against STZ-NA induced diabetes; besides, the traditional claim of the drug *Murva* is also confirmed by this investigation.

Keywords: Murva, Root, *B. vahlii*, Diabetes, Streptozotocin-nicotinamide

ANTIDIABETIC ACTIVITY OF *SPHAERANTHUS AMARANTHOIDES* BURM. F. ROOT IN ALLOXAN INDUCED DIABETIC RATS-A COMPARATIVE STUDY WITH THE ACCEPTED SOURCE *S. INDICUS*

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ABSTRACT

Munditika is one of the important drugs in Ayurveda and the accepted botanical source is *Sphaeranthus indicus* Linn. It is used to treat various diseases like jaundice, fever, epilepsy, gastric disorders and painful swellings. The root of *S. indicus* is used in the treatment of diabetes. *Sphaeranthus amaranthoides* is used as a substitute for the drug, *Munditika*. *Sphaeranthus amaranthoides* is a fragrant herb distributed in moist places throughout the plains of south India. The aim of present study is to compare the antidiabetic activity of *S. amaranthoides* with *S. indicus* by alloxan induced diabetic model, which will provide an alternate source for the drug *Munditika.* Preliminary phytochemical screening of both the plant extracts revealed the presence of alkaloids, terpenoids, tannins and flavonoids. Anti diabetic effect of both extracts was determined by assessing the fasting blood glucose level, serum lipid profile and liver antioxidant enzymes level. Administration of ethanol extract of both the plants at 400 mg/kg b. wt showed a significant (***P<0.001) reduction in elevated glucose levels, serum lipid profiles and increased the reduced HDL level in diabetic rats. Results revealed that ethanol extract of *S. amaranthoides* at 400 mg/kg dose showed a better antidiabetic activity when compared to *S. indicus*. This indicates that *S. amaranthoides* may be used as alternate source for *S. indicus* The present study thus helps in not only providing alternate source for the drug *Munditika* but also helps in reducing pressure on the accepted botanical source and contribute towards preserving the germplasm.

Keywords: Alloxan, Antidiabetic, *Sphaeranthus amaranthoides*, Fasting glucose level, Lipid profile

MOLECULAR DOCKING STUDIES OF SOME NOVEL FURAN DERIVATIVES AS POTENT INHIBITORS OF *ESCHERICHIA COLI*

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ABSTRACT

*Escherichia coli*is the most prevalent gram negative bacteria responsible for a varietyof hospital-acquired infections, urinary tract infections and enterocolitis. As the bacterial strains are rapidly acquiring resistance to the available antibiotics, there is a need to discover novel antibacterial agents with different scaffolds. In this study, sixteen novel furan derivatives containing the azetidinone moiety were designed and synthesized to arrive at potentially effective antibacterial agents. *In silico* antibacterial activity was carried out to identify the specificity of the furan derivatives for the antibacterial targets using 'Glide'. Molecular docking studies were conducted on four antibacterial targets of *E. coli*; Dihydrofolate reductase (PDB ID: 1RX7); DNA gyrase (PDB ID: 5MMO); Enoylreductase (PDB ID: 1C14); methionine aminopeptidase (PDB ID: 1C14). Energy minimization of title compounds was carried out, and the ligands were docked on to the active site of the enzymes. Molecular docking was carried out at both the Standard Precision (SP) and extra precision (XP) modes. The docking poses were ranked according to their docking scores and their binding energy with the enzyme. The results obtained for the molecular docking of the title compounds with enoyl reductase of *E. coli* is quite promising. The studysuggest that compounds 4D, 4E, and 4Kare potential inhibitors of enoyl reductase and specifically bindto the enzyme. They form pi-pi stacking interactions with PHE 94 and TRY 146 at the active site of the protein. Study on the binding interactions and inhibition brought about by the furan derivatives provide valuable insights into the SAR and can be used to aid in the discovery of novel antibiotics.

Keywords: Furan, Azetidinone, *E. coli*, Docking, Anti-bacterial activity

DESIGN AND MOLECULAR DOCKING STUDIES OF NOVEL HYBRID MOLECULES OF BENZOXAZINYL PYRAZOLE ARYLIDENES AS POTENT ANTIFUNGAL AGENTS

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ABSTRACT

One of the major reasons for morbidity and mortality in immune compromised patients is reported to be fungal infections. Among these infections opportunistic infection by *Candida albicans* is the most common. Availability of antifungal agents for treating these infections is limited and most of them are associated with relapse. Benzoxazine and pyrazole derivatives exhibit wide range of biological activities. Combination of heterocyclic molecules has proved to be a successful approach for augmenting biological activities. In the present study, novel hybrid molecules of Benzoxazinyl Pyrazole Arylidenes were designed and synthesized by suitable synthetic routes. These molecules were screened for their *in silico* antifungal activity that led to explore the specificity of synthesized novel molecules for antifungal targets using 'Glide. Molecular docking studies were conducted on three antifungal targets; N-myristoyl transferase of *C. albicans* (PDB ID: 1IYK); Dihydrofolate reductase of *C. albicans* (PDB ID: 4HOE); cytochrome P450 14α-sterol demethylase of *M. tuberculosis* (PDBID: 1E9X);Energy minimization of title compounds was carried out using Ligprep. The proteins were optimised and minimised, a three dimensional grid was generated at the active site and molecular docking was carried out at both the standard precision (SP) and extra precision (XP) modes. The docked poses were ranked based on their docking scores and ligand receptor binding free energy with the enzyme. These studies revealed that hybrid molecules showed promising inhibitory activity.

Keywords: Pyrazole, Benzoxazine, Molecular docking, Antifungal activity

MOLECULAR DOCKING STUDIES OF NOVEL COUMARINO PYRAZOLINONE DERIVATIVES AS ANTIFUNGAL AGENTS

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ABSTRACT

The incidence of opportunistic and pathogenic fungal infectionshas increased inrecent years. *Candida albicans*is an opportunistic fungal pathogen that is responsible for candidiasis in human hosts. Cytochrome P450-14α-sterol demethylase (Cyp 51) is a primary target in the treatment of most fungal infections and it has been a therapeutic target for several generations of azole antifungal agents. Serious fungal infections remain difficult to treat and the microbial resistance to the available drugs is emerging. This makes it necessary to continue the search for new antifungal agents. Coumarins and pyrazolines exhibit antifungal activity. In this study, ten novel coumarin derivatives with pyrazolinone moiety were designed and synthesized to determine their additive effect towards antifungal activity. *In silico*antifungal activity was carried out to identify the specificity of the novel coumarinopyrazolinone derivatives for the antifungal targets using 'Glide'. Molecular docking studies were conducted on three antifungal targets; Dihydrofolatereductase of *C. albicans* (PDB ID: 4HOE); N-myristoyltransferase of *C. albicans* (PDB ID: 1IYK); Cyp 51 of *M. tuberculosis* (PDB ID: 1E9X). Energy minimization of title compounds was carried out using Ligprep, the proteins were optimized and minimized, a three dimensional grid was generated at the active site, and molecular docking was carried out. The docking poses were ranked according to their docking scores and their binding energy with the enzyme. The results obtained were quite promising. With these encouraging results, all the synthesized compounds can be further explored for structural modification and detailed microbiological investigations to arrive at possibly more potent antifungal agents.

Keywords: Coumarin, Pyrazoline, Antifungal activity, Docking

KNOWLEDGE OF SELF-MEDICATION PRACTICES AMONG PREGNANT WOMEN: A CROSS SECTIONAL STUDY

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ABSTRACT

Self-medication practice is defined as the choice and utilization of medicines by individuals to treat self-recognized symptoms. Self-medication with no knowledge about the use and harmful effects of drugs can affect the foetus and mother causing several unintended risks. Several interventions can be made to reduce the rates of self-medication by enhancing individual's knowledge about self-medication practices. Aquestionnaire-based cross-sectional study was conducted among pregnant population attending a tertiary care hospital with an objective to assess their knowledge regarding self-medication practices. Chi-square test was used to assess the level of association between the demographics and knowledge parameters. Majority of the participants were aware of self-medication (64.6%). The main source of information for self-medication was local pharmacy shop (71.2%). 81.2% of the subjects felt that it was unsafe to use self-medication during pregnancy. Knowledge regarding the side effects of medications among the study population showed that 54.2% were aware about side effects whereas 27.3% were unaware. Knowledge level of the participants was positively associated with their location of stay (urban) and educational status (p value: <0.05). In our study most of the participants had good knowledge and it could be attributed to their educational status. Awareness programs regarding self-medication practices should be mandated for pregnant women to ensure safe use of drugs.

Keywords: Self-medication, Knowledge, Pregnant women

QSAR STUDY OF NITROPHENYL DERIVATIVES AS ALDOSE REDUCTASE INHIBITOR

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ABSTRACT

Aldose reductase (EC 1.1.1.21, ALR2) is an enzyme that plays a vital role in polyol pathway that catalyses the NADPH dependent reduction of glucose to sorbitol associated with chronic diabetic complications. Here, we report an attempt to elucidate the structural and physicochemical properties of Nitrophenyl analogs as inhibitors for Aldose reductase. QSAR Studies were performing on the set nitrophenyl analogs as aldose reductase using Vlife MDS 4.0 Software. The model develop have predictive correlation coefficient (r^2_{pred}) of 0.8469. Model was developed, taking total 16 molecules of which 11 molecules are used for training set in the software and 5 molecules are used as test set to optimize the QSAR Model with co-relation coefficient (r^2) of 0.9352 and cross-validated correlation coefficient of (q^2) of 0.8639. Various sets of descriptors were analysed, each encoding different properties to develop a statistical model. The model were developed using multiple linear regression (MLR) technique to predict the structural features of nitrophenyl derivatives as aldose reductase inhibitors.

Keywords: QSAR, Aldose reductase inhibitor, Nitrophenyl derivatives, Diabetes

PHYSICOCHEMICAL AND PHARMACEUTICAL CHARACTERISATION OF MUCILAGE FROM SWEET BASIL SEED

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ABSTRACT

Gums and mucilages are of immense significance as excipients owing to their renewable natural sources, cheapness, ready availability, biodegradability, non-toxicity, ability to undergo hydration and swelling rapidly. To satisfy the ever-increasing demand for highly specific and functional excipients, sweet basil (*Ocimum basilicum* L.) has been selected for the purpose of isolation of mucilage from its seeds and its physicochemical and pharmaceutical characterisation. The geometric diameter, sphericity and surface area of the seed have been found to be 1.24±0.31 mm, 0.62±0.01 and 4.83±0.5 mm^2 respectively. From microscopy, mucilage from seeds was seen to emerge as spiral filaments as soon as they were placed in water. The FTIR study reveals the mucilage to be a carbohydrate containing–OH groups with intermolecular hydrogen bonding as in polysaccharides, with 1 glycosidic bonds. Qualitative phytochemical screening of *Ocimum basilicum* L. seed mucilage (BSM) revealed the presence of non-reducing sugars, gums and mucilage. X-ray diffractogram presented its amorphous structure. The HPTLC profiles of BSM in n-butanol: acetic acid: water (4:1:1) at 254 nm and at 366 nm (before and after spraying with p-anisidine) revealed several bands with R_f values ranging from<0.1 to 0.5. The water-holding capacity of the mucilage has been found to be 97.5±2.4 g/g mucilage and swelling index values (0.1-0.5% w/v) were in the range of 100±10 to 200±13 at 25 °C. BSM was found to possess fair to passable flow property with Hausner's ratio of 1.247 and angle of repose of 37.57 °. Therefore, mucilage from sweet basil seed can be employed as an excipient in manufacture of tablets by wet granulation after addition of suitable lubricants and also in development of liquid dosage forms.

Keywords: Flow property, HPTLC, Mucilage, *Ocimum Basilicum*, Swelling index, Water-holding capacity

DESIGN AND DEVELOPMENT OF TOOTH PASTE CONTAINING ALCOHOLIC EXTRACT OF PSIDIUM GUAJAVA LEAF

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ABSTRACT

The intension of present work is to incorporate economically cheap, easily available but effective herbal ingredient in personal hygiene products. Leaves of species *Psidium guajava* (Guava) have many properties like antibacterial, anti-cancer, anti-diabetic, anti-oxidant etc. The leaf extract of guava has traditionally been used for its health benefits. Toothpaste is a dentifriceused clean, maintain and improve the health of teeth. Toothpaste is mainly used to promote oral cleanliness and also acts as an abrasive that helps to prevent dental plaque and food particles from the teeth. The main aim of this investigation is to incorporate the herbal ingredient to that toothpaste that can effectively cleanse oral bacteria. Guava leaves were obtained from domestic garden. Guava leaves were washed with distilled water and shade dried for three days and then powdered for extraction. Guava leaf extraction was performed by Soxhlet apparatus with 70% ethanol for its antibacterial activity. This extract was used as principle ingredient for herbal toothpaste. Toothpaste formulation performed at laboratory level. The formulation was subjected to various evaluation tests like pH, spreadability, foaming ability, moisture content and zone of inhibition. All the results of evaluation tests found within the limits. For getting antibacterial property extraction is done against ethanol and agar well diffusion method used to identify its antibacterial activity shown by guava leaf extract on *Escherchia coli*, S*taphylococcus aureus* depend on saponins, tannins and flavonoids. Even the extract can be used directly for treatment of inflamed gum. Pentacyclic tri-terpenoid guajanoic acid is main constituent of guava leaf extract.

Keywords: *Psidium guajava*, Herbal Toothpaste, Antibacterial, Soxhlet apparatus

DRUG UTILISATION EVALUATION OF CHEMOTHERAPEUTIC AGENTS IN CANCER PATIENTS

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ABSTRACT

Chemotherapeutic agents are the mainstay therapy for most cancers. They find their use individually and as a part of a multimodal approach. However, the prescribing patterns are not extensively studied in developing nations. A six month long prospective cross-sectional study was conducted in patients admitted with cancer in Medical Oncology Department. Patients fulfilling study criteria were enrolled and pertaining data was collected by conducting medication history interviews and documented in suitably designed electronic database. A total of 169 cancer patients were enrolled during the study period, out of which, 47 (15.46%) received cisplatin, 25(8%) with carboplatin and cyclophophamide, 23(7.5%) with oxaliplatin. Among plant alkaloids vincristine and vinblastine were prescribed to 11 (3.2%) and 5(1.6%), docetaxel to 17(5.6%), paclitaxel to 20 (6.5%) patients. Irnotecan and pemetrexed were given to 3 (1%) patients. 5-Fluoro uracil was prescribed to 34 (11.2%) patients. 9 (3%) patients received gemcitabine. Bleomycinanddoxorubicin were given to 7(2%) and 25(8%) patients. Other drugs such as MTX,, decetabine, ifosfamide, dacarbazine, arsenic trioxide, were given to 4(1.3%) and cytarabinewas given to a single patient. With the addition of a clinical pharmacist in the health care team has improved the overall prescribing and adherence of parenteral chemotherapeutic drugs amongst admitted patients. During the study period nausea, vomiting and alopecia were commonly reported as ADR's.

Keywords: Chemotherapeutic agents, Multimodal approach, Vincristine, Vinblastine

PHARMACOVIGILANCE OF ANESTHETICS IN THE DEPARTMENT OF GENERAL SURGERY: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Adverse drug reactions (ADRs) are one of the leading causes of morbidity and mortality worldwide. Anesthetics might inflict a significant number of potential ADRs which require consistent monitoring. A prospective observational study spanning six months was carried out on inpatients admitted to the Department of General Surgery of a tertiary health care hospital. The aim of the study was to detect, assess and report the suspected adverse drug reactions (ADRs) observed in patients who received at least one anesthetic drug. The suspected ADRs were documented and analysed for causality, severity and preventability using relevant validated scales. A total of 180 patients were studied, out of which 139(77%) developed atleast one ADR due to anesthesia. General Anesthesia (GA) included a combination of drugs like propofol,midazolam, fentanyl etc., while Local Anesthesia(LA) mainly comprised of either bupivacaine or lidocaine. Among the total 212 ADRs observed, GA contributed to 135(64%) reactions and LA caused 77(36%) of them. 93(92%) males (OR: 1.58,95% CI) were observed with ADRs and showed predominance over females. Cardiovascular system (71%) was most commonly affected followed by respiratory system (13%). The causality assessment using Naranjo's scale revealed that 126(59%) ADRs were probable. 124(58%) ADRs were moderate and 8 (4%) were severe according to Hartwig and Siegel's severity assessment scale. As per Schumack and Thornton Preventability assessment scale, 181(85%) ADRs were probably preventable. Anesthetics can induce potential adverse drug reactions which require prompt management and continous reporting. Thus, pharmacovigilance plays a prominent role in optimizing therapeautic outcomes, which will substantially reduce the financial burden on patients.

Keywords: Pharmacovigilance, Anesthetic, Adverse drug reaction, Causality, Naranjo's Scale, Hartwig and Siegel's severity assessment scale

LITERARY INVESTIGATIONS *ON MYCOPLASMA GENITALIUM*: NEXT SUPERBUG

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ABSTRACT

Mycoplasma genitalium is one of the important causes of non-gonococcal urethritis. Rising incidence and emerging antimicrobial resistance are a major concern these days. The poor clinical outcomes with doxycycline therapy led to the use of azithromycin as the primary drug of choice. Single-dose azithromycin regimen over a period of time was changed to extended regimen it needs better clinical cures and less risk of resistance development. However, emerging macrolide resistance, either due to transmission of resistance or drug pressure has further worsened the management of this infection. The issues of drug resistance and treatment failures also exist in cases of *M. genitalium* infection. At present, the emergence of multi drug-resistant (MDR) *M. genitalium* strains is an alarming sign for its treatment and the associated public health impact due to its complications. However, newer drugs like pristinamycin, solithromycin, sitafloxacin, and others have shown a hope for the clinical cure, but need further clinical trials to optimize the therapeutic dosing schedules and focus on to the design of formulation for appropriate treatment regimens. Rampant and inappropriate use of these newer drugs will further sabotage future attempts to manage MDR strains. There is currently a need to formulate diagnostic algorithms and etiology-based treatment regimens rather than the syndromic approach, preferably using combination therapy instead of a monotherapy. Awareness about the current guidelines and recommended treatment regimens among clinicians and local practitioners is of utmost importance. Antimicrobial resistance testing and global surveillance are required to assess the efficacy of current treatment regimens and for guiding future research for the early detection and management of MDR *M. genitalium* infections.

Keywords: *Mycoplasma genitalium*, Non-gonococcal urethritis, Antimicrobial resistance, Azithromycin, Moxifloxacin, Doxycycline

HIBISCUS LEAF MUCILAGE AS STABILISER FOR PHARMACEUTICAL DISPERSE SYSTEMS

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ABSTRACT

Stable pharmaceutical disperse systems are defined as heterogeneous, biphasic systems as suspensions and emulsions, stabilized by third agent or stabilizer. The aim of the present investigation is to extract mucilage from the leaves of *Hibiscus rosa-sinesnsis* L. and explore its ability to function as stabiliser for adult (10%w/v) and paediatric (2.4%w/v) paracetamol (PCM) suspensions and 2% v/v sunflower oil emulsions. Isolated mucilage powder was subjected to phytochemical tests, FTIR spectroscopy, X-ray diffractometry and study of viscosity and swelling behavior in water. Qualitative phytochemical screening of the mucilage revealed the presence of non-reducing sugars, gums and mucilage. HM possesses highly amorphous structure with extremely low overall crystallinity. The mucilage belongs to the class of carbohydrate as it contains–OH groups with intermolecular hydrogen bonding, with 1→4 glycosidic bonds which accounts for its high hydration capacity. Swelling index and relative viscosity of 0.5% w/v mucilage in water was found to be 1050 and 4.84 respectively at 31 °C. Although adult PCM suspensions containing 4% w/v mucilage exhibited poor redispersibility, paediatric suspension containing 1 and 2% w/v mucilage showed gradual settling of particles with good re-dispersibility and flowability. Emulsion activity index (EAI) values of the three emulsions (0.5, 0.75 and 1%w/v HM) were found to be close to 2 m^2g^{-1} suggesting concentration independent activity of HM as emulsifier. Emulsion stability index (ESI) values at 72 h showed comparatively less stability with increasing concentration of mucilage probably due to polysaccharide chain overlapping at high concentration leading to less effective surface coverage per unit gum concentration. Therefore, hibiscus leaf mucilage has the capacity to stabilize a suspension or emulsion based on its capacity to adsorb onto solid or liquid interfaces.

Keywords: Hibiscus leaf mucilage, Redispersibility, Swelling index, Emulsion activity index, Emulsion stability index

ANTI-CANCER AND ANTI-ANGIOGENESIS ACTIVITY OF LACHESIS-200

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ABSTRACT

Cancer is group of diseases involving abnormal cell growth with invading and spreading ability in other body parts. Cancer concerns globally with its high mortality rate. Current treatment modality includes chemotherapy, radiation therapy, laser therapy, immunotherapy and surgery etc. But these treatments have limitations like drug resistance and morbidity associated treatment. Therefore, there is a clinical need for a new treatment modality which will target cancer cell more efficiently. Homeopathy treatment involves use of natural substances in minute dose to trigger the response against specific symptom. Snake venoms are a complex mixture of proteins, peptides, carbohydrates, lipids, metal ions and organic compounds. Several peptides found in snake venoms display anticancer as well as anti-angiogenic activity being a great source of models for the development of new drugs. Here we proposed the anti-cancer and anti-angiogenesis activity of a snake *Lachesis muta* venom called Lachesis-200. Cytotoxic and anti-cancer effects were performed by MTT assay while anti-angiogenic effect was determined by CAM assay performed in fertilized chick embryo. MTT assay showed IC50 at 91.10% on L929 while at 37.47% of Lachesis-200 on human prostate cancer cell line. CAM assay showed the anti-angiogenesis effect of Lachesis-200 significantly at 50% and 100% of Lachesis-200. We observed that Lachesis-200 has anti-cancer and ant-angiogenesis activity. We can anticipate the development of a new anti-cancer agent from snake venoms in the future which will be useful in cancer therapy.

Keywords: Anti-cancer, Anti-angiogenesis, Snake venom, Lachesis-200, Cam assay

FORMULATION OF ORAL SUSTAINED RELEASE TABLETS OF ACECLOFENAC SOLID DISPERSIONS

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ABSTRACT

Solid dispersions of aceclofenac, prepared by common solvent evaporation technique, were used to design once-a-day oral sustained release tablet formulation, with a view to hasten the onset of action. Since, aceclofenac is a poorly water-soluble drug; formulating solid dispersions of the drug in potential hydrophillic carriers would improve its aqueous solubility. This will hasten the onset of action of the drug. Also, aceclofenac has a short half-life of 4 to 4.3 h and has to be administered twice daily. Hence, an attempt was made to formulate sustained release tablets using the solid dispersions of aceclofenac. The ultimate endeavor of the study was to formulate tablets of aceclofenac, which would give a fast onset of action along with sustained release over 24 h. The solid dispersions were prepared using hydroxy propyl methyl cellulose (HPMC), maltodextrin and poly vinyl pyrollidone as carriers in the ratio of 1:1, 1:3 and 1:5. The dispersions in 1:1 ratio were chosen to design matrix tablets using two grades of HPMC. The other two ratios of solid dispersions could not be incorporated into matrix tablets since it would increase the bulk weight of the tablets substantially. The tablet formulations prepared with 1:1 dispersions were subjected to *in vitro* dissolution data. The findings of this study indicate that, incorporation of solid dispersions of the poor water soluble drug, aceclofenac in HPMC matrices can be a promising system in development of once-a-day tablet dosage form, with a rapid onset of action.

Keywords: Solid dispersions, Aceclofenac, Sustained release tablets

MURRAYA KOENIGII: INVESTIGATIONS ON RELATIONSHIP BETWEEN SAR AND BIOLOGICAL ACTIVITY OF PLANT BIOACTIVE

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ABSTRACT

Murraya koenigii, a plant belonging to the rutaceae family, which is widely distributed in Eastern-Asia and its medicinal properties are well documented in Ayurveda, the traditional system of medicine. Though systematic research and pharmacognostic evaluation of different parts of plant extracts has been shown to possess antiviral, antidiarrhoeal, antileishmanial, antioxidant, antimicrobial, hepatoprotective, antimutagenic, anticancer activities. Phytoconstituents present in leaves includes phenols, steroids, vitamin-c, saponin, quinones, alkaloids, Flavonoids, tannins, carbohydrates, proteins, volatile oils and nicotinic acid. In studies, it was found that *Murraya koenigii* essential oil inhibited xanthine oxidase activity, which caused a decrease in the generation of superoxide radicals. This essential oil manifested greater antiradical activity. Moreover, there is a mechanism of action involved in this i.e. the scavenging of superoxide radicals. Hence, it proves the antioxidant properties of *Murraya koenigii* leaf essential oil and thus broadens the scope for its implementation in food industry and medicine. It also has been reported that organic extract of different part of murraya (leaves, bark, root and seed) is useful in the treatment and remedy of bronchial respiratory troubles by blocking 5-lipooxygenase activity. Almost all parts of this plant contain carbazole alkaloids, which are well known for their various pharmacological activities including anti-HIV, anticancer, antibacterial, antifungal activities. The most important chemical constituent responsible for its intense characteristic aroma are p-gurjunene, p-caryophyllene. In this plant extract carbazole alkaloid, mahanine has identified as the principle bioactive component among several other chemical constituents. SAR studies on antitumor effect of carbazole alkaloid showed that a prenyl group at C-4 plays an important role in the inhibitory activity. So, the primary objective of this review is to summarise research data on plant constituent present in different parts of *Murraya koenigii* with SAR in between their plant constituent and its biological activity. Determining the bioactive mechanism and tracing SAR will promote the discovery of new drugs and pharmacological agents.

Keywords: *Murraya koenigii*, Structure activity relationship, Biological activity, Plant bioactives

AN OVERVIEW ON DIABETIC NEPHROPATHY

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ABSTRACT

Diabetes mellitus is one of the leading chronic metabolic disorders seen in the current society and a leading cause to several numbers of complications. Among all the causes for deaths involved with end stage renal disease (ESRD), those associated with diabetes is relatively high. Deaths due to diabetes associated renal failure are only second to deaths due to myocardial infarctions. Diabetic nephropathy is a complication which is seen in patients with history of renal failure and chronic diabetes. The three main complications of diabetic nephropathy include (a) glomerular lesions (b) renal vascular lesions (c) pyelonephritis. Glomerular lesions also known as Kimellstiel-Wilson lesion, usually arises in the mesangium and as effect of which the capillary loops are forced towards the periphery. Pyelonephritis is a condition where the inflammation of kidneys occur which may be either chronic or acute starting from the interstitial tissue to the tubules and in most severe cases may also move to glomeruli. The lesions found in the glomeruli and tubules become sclerotic and develop into a fatal form and starts affecting the renal functions. Approximately 10% to 35% of population with chronic diabetes and renal failure are identified with sclerotic conditions, which is a major cause of mortality. Atherosclerosis in renal tubules is only a part as the changes are similar to that of other blood vessels in body. In the present paper, we also deal with certain non-invasive methods of insulin delivery such as (a) ocular route (b) oral route (c) pulmonary route (d) nasal route. We also look into the currently available insulin therapy strategies like (a) aerosols (b) dry powder inhalational (c) synthetic beta cells (d) hydrogel (e) microcapsules and also treatment of diabetic nephropathy.

Keywords: Diabetic nephropathy, End stage renal disease, Pyelonephritis

PHARMACOLOGICAL EVALUATION OF 'AMRUTHA KASHAYA' IN ACUTE HYPERLIPIDEMIC MODELS OF MICE

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ABSTRACT

Hypercholesterolemia and hypertriglyceridemia are the major risk factors in the development of coronary artery disease and the progression of atherosclerosis.'Amrutha Kashaya (AKA)' is an Ayurvedic preparation recommended as antihyperlipidemic agent. Though the constituents in AKA, likelashuna, shunti, triphala, arjuna, jatamansi, amrutha satva are known to possess antihyperlipidemic activity, the combined efficacy of their formulation (AKA) has not been reported. In this study, we have investigated the anti-dyslipidemic activity of AKAin acute models of dyslipidemia namely olive oil-induced hypertriglyceridemia (fat tolerance test) and tyloxapol-induced hyperlipidemia in mouse. All the procedure was approved by Institutional Animal Ethics Committee. In fat tolerance test, acute administration of AKA (10 ml/kg, *p. o.*) significantly decreased the elevated triglyceride levels at 2h and 4h as compared with olive oil group, suggesting the influence of AKA ontriglyceride absorption in mouse. The hypolipidemic effect of AKA was comparable toOrlistat (10 mg/kg, *p. o*.). In the tyloxapol-induced hyperlipidemia model, AKAsignificantly reduced hypertriglyceridemia at 12h as compared with tyloxapol group. However, AKA failed to show any significant effect on elevated plasma cholesterol. The standard drug Atorvastatin (20 mg/kg, *p.o.*) significantly reversed the hypertriglyceridemia and hypercholesterolemia at 24hin tyloxapol model. These findings indicate that AKA reduced the plasma triglyceride levels by preventing theirabsorption from stomach/intestine.

Keywords: Hyperlipidemia, Atherosclerosis, Fat tolerance, Antidyslipidemic, Tyloxapol

3D PRINTING TECHNOLOGY IN PHARMACEUTICAL DRUG DELIVERY: PROSPECTS AND CHALLENGES

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ABSTRACT

Three-dimensional printing (3D) technology relies on computer aided designs to achieve unparalleled flexibility, time-saving, and exceptional manufacturing capability of pharmaceutical drug products. Pharmacy practice is moving to the next era of tailoring medications to the individual patient's needs considering genetic profiles, age, race, gender, epigenetic and environmental factors. 3D printing is most predominantly used in the material science sector using *stereolithography technique*. Through this technique, researcher can formulate any object by fusing different materials, layer by layer to form a 3D object physically. Further, 3D printing explores the possibility to personalize medicine for individual patients. Pharmaceutical regulatory bodies like FDA, SWISSMEDIC etc encourage the development and application of 3D printers in pharmaceutical manufacturing technology.

Keywords: Three-dimensional printing, Pharmacy practice, Stereolithography technique

TEMPERATURE TRIGGERED OPHTHALMIC *IN SITU* GELS OF DORZOLAMIDE HYDROCHLORIDE FOR GLAUCOMA

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ABSTRACT

Dorzolamide HCl is an antiglaucoma drug available in conventional eye drops. The demerits of conventional ophthalmic preparations are no sustained effect, precorneal elimination leading to poor bioavailability. This can be overcome by making an alternative formulation approach such as ophthalmic *in situ* gels, which are viscous polymer-based liquids that exhibit sol-to-gel phase transition on the ocular surface due to change in a specific physicochemical parameter like ionic strength, pH or temperature. The present work describes formulation and evaluation of temperature triggered ophthalmic *in situ* gels of dorzolamide HCl for glaucoma using Poloxomer 188 and Poloxomer 407 as temperature triggered polymers. HPMC K4M is used as viscosifying agent. Six formulations were prepared by cold method and were evaluated for appearance, clarity, pH, rheological studies, gelling temperature, drug content and *in vitro* drug release, drug release kinetics, *ex vivo* permeation, Isotonicity, sterility and *in vitro* ocular irritation studies. The drug release studies revealed sustained profile of 8-10 h and one of optimized formulation showed highest drug release of 92.67% which was found to be isotonic and non irritant with no ocular damage.

Keywords: *In situ* gels, Dorzolamide HCL, Viscosity, Ph

GENERATION OF PHARMACOPHORE AND ATOM BASED 3D-QSAR MODEL OF NOVEL 5-ALPHA-REDUCTASE INHIBITORS

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ABSTRACT

The androgen dependent prostate diseases are prone to anomalous production of dihydrotestosterone (DHT) particularly in tissues of the prostate gland. Testosterone (T), primary male sex hormone is converted to it's metabolite DHT in cells by 5α reductase (5αR) type II enzyme. Drug therapy is the best choice for the treatment of benign prostatic hyperplasia (BPH). Drug therapy act by reducing the DHT formation through inhibiting the 5αR enzyme. Thus, this research work was undertaken to design a novel 5αR enzyme inhibitor by pharmacophore and Atom-based 3D QSAR technique. A dataset of twenty-nine ligands available with IC 50 were chosen from the literature. Schrodinger molecular modelling software having Phase 3.0 module was implicated for generation of pharmacophore models. Pharmacophore hypothesis with five features having two H-bond acceptor and three hydrophobic group was developed, i.e., AAHHH.715. This Pharmacophore hypothesis was regarded as the finest hypothesis. The hypothesis resulted into statistically significant three-dimensional QSAR model. The statistical parameters were found to be 0.9804 as r2 value and 0.8321 as q2 value. Out of 29 ligands, 23 ligands were assigned as training set and 6 ligands as a test set. The squared correlation coefficient between training and test sets based on actual and predicted values were observed to be 0.96 and 0.87 respectively. The 5αR enzyme inhibitors predicting requirements can be done by this pharmacophore and 3D-QSAR model.

Keywords: 5-alpha reductase, Pharmacophore, 3D-QSAR, DHT, BPH

A STUDY BASED ON BINARY FINGERPRINTS FOR FLAVONE ANALOGUES AS CDK2/CYCLIN A INHIBITORS-A TWO DIMENSIONAL QSAR STUDIES

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ABSTRACT

In the present study, we have applied seven available similarity based binary fingerprints as implemented in the new cheminformatics package Canvas, on a validated dataset for the test compounds selectively inhibiting CDK2/Cylain A. The fingerprint methods used were: Linear, Dendritic, Radial,, MOLPRINT2D, Pairwise, Triplet, and Torsion. Out of the seven fingerprints used,the fingerprint dentritic resulted in a statistically significant 2D QSAR model with regression coefficient (r2) value of 0.9284 and cross validation coefficient(q2) value of 0.9865. The model could be used to design potent inhibitors against the target CDK2/Cyclin A as a goal towards development of novel anticancer agents.

Keywords: Binary fingerprints, 2D-QSAR, CDK2, Cancer

A FOCUS ON FLOATING DRUG DELIVERY SYSTEM

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ABSTRACT

The ultimate goal of any drug delivery system is effective disease/disorder management, minimum side effects and greater patient compliance in cost effective manner. The drug therapeutic indices could be maximized while indices of adverse reaction or side effects could be minimized by regulating the drug release in body in a well defined controlled manner. this would eliminate the haphazard and control blood plasma profile of drug usually associated with conventional dosage form gastro relending dosage form, i.e. those design to exhibit a prolonged gastric residence time (GRT) have been a topic of interest in terms of their potential for control drug delivery, FDDS (Floating drug delivery system) is desirable for drug with an absorption window in the stomach or in the upper small intestine. The factor affecting the gastric emptying as density, size and shape of dosage form. Administration of drug acting anticholinergic agent e. g. atropine, codeine etc. Biological factor such as gender, posture, age, sleep, body weight, physical activity and disease states.

Keywords: Floating drugs delivery system, Gastric residence time

A STUDY ON *MOMORDICA CHARANTIA*: STRUCTURE ACTIVITY RELATIONSHIP AND PHYTOCONSTITUENTS

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ABSTRACT

Momordica charantia L. (*M. charantia*), a member of the *Cucurbitaceae* family, is widely distributed in tropical and subtropical regions of the world. It has been used in folk medicine for the treatment of diabetes mellitus, and its fruit has been used as a vegetable for thousands of years. Its common phytochemical components include alkaloids, charantin, flavonoids, glycosides, phenolics, tannins, and terpenoids. This plant is rich in various saponins including momordicin, momordin, momordicoside, karavilagenin, karaviloside, and kuguacin, all of which have been reported to contribute to its remedial properties including antibacterial, antifungal, antiviral, and antiparasitic infections. phytochemicals including peptides and proteins have antimicrobial, immune suppression, antitumor activity and present in seed of the plants, polysaccharides have antioxidant,antidiabetic, immune enhancement, neuroprotective, antitumor activity and present in various parts of the plants, terpenoids have anticancer, antioxidant, antidiabetic, hypoglycemic and cancer activity and present in stem,leave and fruit of the plants, phenolics have antioxidant, anti inflammation, immune enhancement and present in fruit, pericarp and seed of the plants, lipids have antitumor, antioxidant activity and present in seed, flesh of the plants, Saponins have antihyperglycemic, hypolipidemic, antiviral activity and present in fruit,root and seed of the plants, sterols have antimicrobial activity and present in pericarp and fruit of the plants. The trace elements and the mineral content of the leaves were also evaluated. Ethanolic extracts of the leaves reported *in vitro* antibacterial activities against gram negative bacteria such as *Salmonella typhi*, *Pseudomonas fluorescens*, *Pseudomonas aeruginosa* and *Escherichia coli*.

Keywords: *Momordica charantia*, Chemical components, Phytochemistry, Biological activities

A STUDY ON NON CATHETER RELATED PULMONARY INFECTIONS IN DIALYSIS PATIENTS

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ABSTRACT

End stage renal disease (ESRD) is a clinical condition in which there has been irreversible loss of renal function. Dialysis, which includes hemodialysis (HD) and peritoneal dialysis (PD) continue to be the key treatment options. ESRD patients are immuno-compromised hence maintenance dialysis is the long term or a lifelong therapy, which makes patients more sensitive to infections. Patients, during the normal course of treatment are exposed to several infectious risks, and the majority of the patients require at least 1 hospitalization every year for treatment of infections. **Patients with ESRD have higher risk of developing infections due to the disruption of the cutaneous protective barrier by the vascular access used in the hemodialysis. Pulmonary infectious mortality was 14 to 16 fold higher in dialysis patients. Dialysis patients are specifically susceptible to volume overload and pulmonary edema which complicate the diagnosis of respiratory tract infections. A prospective observational study conducted for period of six months, included patients above 18 y undergoing Maintenance Hemodialysis (MHD). The patient data was collected using case records, dialysis notes, interaction with healthcare professionals, interviewing patients and their caretakers and was documented in a suitably designed data collection form. It was observed that the occurrence of pulmonary infection which includes lower respiratory tract infection (LRTI) (55.1%), pneumonia (31%), pulmonary tuberculosis (6.8%) and upper respiratory tract infections (URTI) (6.8%). Hence it was observed that LRTI and pneumonia were common among non-catheter related pulmonary infection in dialysis patients.**

Keywords: End stage renal disease, Dialysis, Non-catheter infections, Pulmonary infection

ANTI-PARKINSON'S ACTIVITY ON NOVEL GLITAZONES

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ABSTRACT

Parkinson's disease (PD) is currently considered as the second most common neurodegenerative disorder in the world. The present study was undertaken to investigate the anti-Parkinson's activity of novel glitazone derivative C10 on experimental model of PD. The novel compound C10 was screened for possible *in vivo* anti-Parkinsonian activity on rotenone induced model of PD. The compound was screened against rotenone induced model at three dose levels of 10, 20 and 30 mg/kg for 21 days on rat model. Before *in vivo* activity, acute toxicity of C10 was performed by OECD guideline 423. *In silico* screening of C10 was also done by Sybil software. On 7th, 14th and 21st day behavioural parameters were evaluated and brains were used for estimation of antioxidant enzyme activity. The novel glitazone C10 at dose 30 mg/kg showed significance anti-Parkinson's activity when compared to other two dose levels. Hence we conclude that the novel glitazone compound have shown anti-Parkinson's activity. But further studies are required to support the present assumption and elucidate detailed neuroprotective mechanism.

Keywords: Glitazone, Anti-parkinson's, Rotenone

DEVELOPMENT AND EVALUATION: TRANSDERMAL DELIVERY SYSTEM OF *GLYCYRRHIZA GLABRA*

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ABSTRACT

Transdermal drug delivery system provides continuous and controlled release of drug at predetermined rate for systemic as well as local effects along with other clinical benefits over conventional methods. *Glycyrrhiza glabra* is a hard herb native to the Mediterranean and certain areas of Asia and effectively used as anti-inflammatory, anti-bacterial, anti-fungal, anti-diabetic, antiviral, anti-ulcer, antitussive, anti-oxidant, skin whitening, anti-diuretic agent. The objective of the present study was to design and formulate transdermal delivery of *Glycyrrhiza glabra.* Transdermal patch and transdermal gel using different ratios of polymers and different types of gelling agents were formulated. The drug-excipient compatibility was studied using infrared spectroscopy and the optimized formulations were evaluated for physicochemical properties like patch thickness, weight variation, folding endurance, tensile strength, drug content, percentage moisture absorption, percentage moisture loss, water vapour transmission rate, pH, spreadability, extrudability, viscosity which yielded satisfactory results. The drug release characteristics were also studied *in vitro* using egg membrane and phosphate buffer pH 7.4 as dissolution medium. Based on physicochemical and drug release studies, transdermal patch having ratio of 5:1 of HPMC K4M: EC showed highest drug release (76.72% after 24 h) and transdermal gel prepared using Carbopol 934 gave highest drug release (59.82% in 8 h).

Keywords: *Glycyrrhiza glabra,* Transdermal patch, Transdermal gel, Transdermal delivery, Wound healing

PHOSPHOLIPID BASED NANOCARRIERS OF *GLYCYRRHIZA GLABRA* FOR THE ENHANCED DELIVERY OF PHYTOCONSTITUENTS

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ABSTRACT

Herbosomes (also known as naturosomes/phytosomes) are amphiphilic phospholipid complexes of drugs bearing active hydrogen that bind to phospholipids, impart enhanced capacity to cross the lipid rich biomembranes, resulting in improved bioavailability. *Glycyrrhiza glabra* Linn. (Liquorice) (Family-Leguminoceae) is a very popular perennial herb from the pre historic time, possessing different pharmacological activities like antibacterial, antioxidant, antimalarial etc. owing to the triterpene saponins, flavonoids and various other phytoconstituents present. Present study was aimed to develop and characterize herbosomal delivery of *Glycyrrhiza glabra.* Herbosomes of *G. glabra* extract with phospholipid (phosphatidylcholine i.e. Phospholipon 90H) were prepared by solvent evaporation technique using QbD approach. A central composite design was used to optimize the formulation and process variables. The prepared herbosomal formulations were evaluated for physicochemical (particle size and zeta potential analysis), functional, and pharmacological attributes. The FTIR, DSC, PXRD, photomicroscopy, SEM and the TEM studies indicated the successful formation of vesicular drug-phospholipid complex. The apparent solubility, *in vitro* dissolution, and *ex-vivo* permeability studies indicated a significant improvement in the aqueous solubility, the drug release, and the membrane permeation of the *G. glabra* extract from the herbosomes respectively. The preliminary *in vitro* and *in vivo* biological evaluation revealed a significantly higher efficacy (likely due to improved bioavailability) of the prepared herbosomes compared to the pure extract. Present study confirms herbosomes as a promising strategy to improve the aqueous solubility and bioavailability of bioactive phytoconstituents.

Keywords: Herbosomes, *Glycyrrhiza glabra,* Phospholipid complex, Qbd, Bioavailability

ASSESSMENT OF MEDICINE PRESCRIBING TRENDS IN NEONATAL INTENSIVE CARE UNIT: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

To evaluate the drug prescribing trends in a neonatal intensive care unit (NICU) at a tertiary care hospital. The prospective observational study that was conducted for a span of 6 mo in NICU at a tertiary care hospital. A total of 70 patients of either sex admitted to NICU, prescribed with one or more medications were included in the study. The data regarding the patient demographics and drug use were collected from the appropriate sources and entered in the structured data collection form and analyzed using the World Health Organization (WHO) indicators. A total of 70 neonates were admitted with male predominance of 61%. Mean gestational age and birth weight were 35±3.14 weeks and 2.2±0.73 kg respectively. The total numbers of drugs prescribed were 207 and average number of drugs per prescription was 3. Intravenous route (80%) was the commonest route of drug administration. 47 % of the drugs were prescribed in generics. 59 % of the total drugs prescribed were antimicrobials. The majority of neonates (84.28%) were prescribed with 1-2 antibiotics, 10 % had 3 to 5 antibiotics, while 2.85 % prescribed more than 5 antibiotics in the whole length of stay. Among antibiotics, penicillin's 52% was routinely prescribed antibiotic followed by cephalosporin's 31% and aminoglycosides 9%. The preterm neonates received more number of antibiotics when compared with term neonates. The study observed penurious generic prescription and an exorbitant rate of IV medications usage. Antibiotics were the most commonly prescribed drugs, although their usage could be justified, but increased frequency of use is a concern. Further more studies on this particular aspect and the guidelines for antibiotic use are required.

Keywords: Prescribing pattern, Neonatal intensive care unit, WHO indicators

NOVEL FORMULATION APPROACH FOR EFFECTIVE WOUND HEALING

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ABSTRACT

Wound dressings are the coverings used to provide a mechanical barrier to external environments thus reducing chances of further injury and infection. The aim of this present work was to develop a natural polymeric hydrogel scaffold incorporated with silver sulfadiazine that would possess most of properties of ideal wound dressings contributing to effective wound healing. There were four hydrogels prepared for management of wound healing like Chitosan honey hydrogel based on acrylamide in-situ polymerization, chitosan with HPMC E15, chitosan with gelatin and a combination of three polymers. On comparative analysis of data obtained, the formulation concept 3 (chitosan with HPMC E15) was taken further for evaluation and ultimately the wound healing effect on animal with 96.72±0.22% drug content. *In vitro* drug release of CG4 showed 55.36±1.52%, 76.99±0.67 % at 6th and 12th hour as compared to 95.54±0.24% at 6thhour with marketed cream (Silverex1). In ex-vivo release study at 12th hour, the marketed cream and formulation showed 28.62±0.23 % and 24.22±0.57%. Formulation and placebo showed comparable antimicrobial effect against antimicrobial activity against *Escherichia coli, Pseudomonas aeruginosa, Staphyloccocusaureus, and Bacillus subtilis, Plasmodium vulgaris and Candida albicans.* The wound healing study *showed that* there was significant difference ($p<0.001$) between the group formulation, control and standard in wound healing rate. Hence the developedformulation showed diffusion based slow release of drug and presence of honey, chitosan and gelatinecontributed to effective wound healing capability.

Keywords: Wound dressings, Silver sulfadiazine, Hydrogel, Chitosan

ISOLATION, CHARACTERIZATION AND IDENTIFICATION OF COUMESTAN AND ECLIPTASAPONINS FROM THE WHOLE PLANT OF *ECLIPTA ALBA*

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ABSTRACT

Eclipta alba L., (Asteraceae) popularly known as 'Bhringraj', a small, branched annual herb with white flower, grows as a common weed throughout India. Present research work aimed on the isolation of coumestan and ecliptasaponins from the whole plant of *Eclipta alba*, using silica gel column chromatography with gradient elution of Petroleum ether: Ethyl acetate: Methanol and TLC analyses. Isolated compounds were purified, characterized on the basis of spectroscopical analysis such as UV, IR, Mass, NMR (^{1}H and [13]C) and identified as Wedelolactone and Eclalbasaponin I and Eclalbasaponin II.

Keywords: *Eclipta alba (l.),* Bhringraj, Column chromatography, Wedelolactone, Eclalbasaponin I, Eclalbasaponin II

GREEN SYNTHESIS, CHARACTERIZATION BIOLOGICAL EVALUATION AND EFFECT OF PROCESS VARIABLES ON SILVER NANOPARTICLES PREPARED USING AQUEOUS EXTRACT OF *MUCUNA PRUREINS* LINN

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ABSTRACT

Silver nanoparticles, are an arch product from the field of nanotechnology, are attracting interest in a range of biomedical applications due to their antimicrobial, bio sensing and imaging and drug carrier properties. *Mucuna prureins* Linn. (Fabaceae) is a popular drug in *Ayurveda*, rich in bioactive compounds like alkaloids, flavonoids, tannins and phenolic compounds which account for its various biological activities and its use in the treatment of Diabetes, Rheumatoid arthritis and in the management of Parkinsonism (due to high amounts of L-DOPA). The present study aimed at synthesizing silver nanoparticles using aqueous extract of *M. prureins*. The study also involved evaluation of the effect of process variables like reductant concentrations, interaction time, reaction pH (3, 5, 9 and 11), reaction temperature (10 °C, RT and 50 °C) and mixing ratio of the reactants on the synthesis process and size of nanoparticles. Characterization of the synthesized nanoparticles was done using UV-Vis spectroscopy, FT-IR, SEM, EDX, XRD, TEM, Photomicroscopy and Fluorescence analysis. The results confirm formation of silver nanoparticles with an average particle size of 5 nm. The results reveal that the size of nanoparticles produced through bioreduction is strongly dependent on the above process parameters. It is concluded that use of *G. glabra* extract makes a fast and convenient method for the synthesis of silver nanoparticles and can reduce silver ions into silver nanoparticles without using any harsh conditions.

Keywords: Silver nanoparticles, Biosynthesis, *Mucuna prureins Linn.,* Process variables, Nanotechnology

VALIDATION OF THE PROCEDURE FOR SPECTROPHOTOMETRIC DETERMINATION OF DESLORATADINE IN TABLETS IN ACCORDANCE WITH THE UNCERTAINTY CONCEPT

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ABSTRACT

The procedure for assay of desloratadine in tablets by a UV spectrophotometric method was validated according to the approach of the State Pharmacopoeia of Ukraine, and its suitability for the intended use was assessed considering the risk of incorrect decisions on compliance. The validation process was based on the requirements for the target uncertainty (1.6%), which, in turns, was determined by the width of content limits for desloratadine (±5%). Linearity, accuracy and precision (repeatability) were evaluated simultaneously for measurement results of 9 model solutions in a concentration range of 70-130% of the nominal content of desloratadine. Results of studies are as follows: Linearity: the residual standard deviation SD_0 = 0.34 (≤0.84); the correlation index Rc = 0.9998 (≥0 .9991); the intercept a = 0.045 (two-step criteria of statistical and practical insignificance: ≤1.14 and ≤1.71, respectively). Precision: the confidence interval for recovery Δ_Z = 0.55 (≤1.6). Accuracy: the average bias value for all model solutions δ = 0.022 (two-step criteria of statistical and practical insignificance: ≤0.185 and ≤0.51, respectively). Intermediate precision: the confidence interval for the mean of independent measurement results obtained on two different days Δ_{int} = 0.33 (≤1.6). Stability of solutions: the difference in the desloratadine content in 48 h Δ_{Stab} = 0.11 for the reference solution and Δ_{Stab} = 0.16 for the test solution (≤0.51). Validation results confirm compliance of the procedure with the intended use: assay in the preparation with content limits of±5% at a 95% confidence level.

Keywords: Validation of analytical procedure, Target uncertainty, Content limits, Criteria for validation characteristics, Assay, Desloratadine, Tablets

IDENTIFICATION OF THE FOOD COLORING SUNSET YELLOW FCF IN TABLETS

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ABSTRACT

Synthetic food colourings providing a pleasing orange colour either individually or in combination with each other (red and yellow) are widely used in pharmaceutical preparations to enhance their appearance and taste. They can be identified by their characteristic visible absorption spectrum. This work aimed at development and validation of an analytical procedure for identification of the synthetic food colouring Sunset Yellow FCF (E110) in tablets of vitamin C. When dissolving the tablets in water, the solution is coloured indicating that the E110 easily passes into the solution. Insoluble in water components can be separated by filtration. The filtered solution is transparent and intensely coloured and, therefore, can be analysed by spectrophotometry. Due to the simplicity and efficiency of the method, visible absorption spectrophotometry was chosen to identify the E110. We developed and validated a spectrophotometric procedure for identification of the E110 in tablets of vitamin C that is specific to this food colouring. The selectivity of the method can be improved by applying first and second order derivative spectra, which allows us not to use a reference standard for the identification of the E110. The validation characteristics such as specificity and robustness were evaluated in the interlaboratory experiment.

Keywords: Food colouring, Tablets, Identification, Visible absorption spectrophotometry, Derivative spectra, E110, Vitamin C

PHARMACOGNOSTICAL STUDIES AND ISOLATION OF AN ALKALOID FROM *BARLERIA CRISTATA* LINN. ROOTS

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ABSTRACT

Barleria cristata Linn. (Acanthaceae), commonly known as Crested purple nail dye is is an attractive plant with blue flowers commonly grown on forest grounds of Tikauli (Nepal) and Tirupati hills (Andhra Pradesh). Traditionally, whole plant is used as a stimulant and demulcent and the decoction of roots is used for years in treatment of inflammation, cough, diabetes and anaemia. The present investigation was carried out to study the histological characters of the roots of the plant. Further the phytochemical studies on the methanolic extract of roots revealed the presence of alkaloids. Column chromatography of methanolic extract of *Barleria cristata* Linn. roots was carried out by using silica gel (60-120#) column chromatography. It was eluted by different solvents in their increasing order of polarity. Fraction No.11 was purified by fractional crystallization to yield 55 mg of brown coloured amorphous powder of Compound-I which was characterized and confirmed as Ibogamine by TLC, Melting point, IR, ^{1}H NMR, [13]C NMR and Mass spectroscopy. Ibogamine, an alkaloid was isolated for the first time from the roots of *Barleria cristata* Linn.

Keywords: *Barleria Cristata*, Ibogamine, Column chromatography

FORMULATION AND EVALUATION OF MUCOADHESIVE MICROSPHERES IN GASTRORETENTIVE DELIVERY OF VENLAFAXINE HCL

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ABSTRACT

The objective of the present investigation was to formulate and evaluate the mucoadhesive microspheres of Venlafaxine HCl using hydroxy propyl methyl cellulose K4M as a polymer. Venlafaxine HCl is a new generation serotonin reuptake inhibitor drug showing effective antidepressant properties, having a short bioavailability of 12.6% and biological half-life of 5 h. Venlafaxine HCl microspheres were prepared by simple emulsification phase separation technique using glutaraldehyde as a cross-slinking agent. Fifteen preliminary trail batches KA1-KA15 of microspheres were prepared by using different volume(10 ml to 50 ml) of glutaraldehyde (25% v/v aqueous solution) as cross linking agent, cross-linking time of 1 to 3 h and the polymer to drug in 2:1 ratio. From those fifteen preliminary trial batches, the optimized formulation was selected based on the percentage of mucoadhesion, stirring speed, (500, 800 and 1000 rpm), drug entrapment efficiency, and particle size. The drug polymer compatibility studies were carried out using FTIR. The stability studies were conducted for the optimized formulation. The optimized formulation exhibited a high drug entrapment efficiency of 70% and a swelling index 1.57, % mucoadhesion after 1hour was 80% and the drug release was also sustained for more than 12 h. As the concentration of glutaraldehyde increased, the mucoadesiveness decreases and there was no significant effect in time.

Keywords: Venlafaxine HCL, HPMC K4M, GRDDS, Mucoadhesive microspheres

DEVELOPMENT AND EVALUATION OF β-TRICALCIUM PHOSPHATE MICROSPHERES TO IMPROVE BONE REGENERATION *IN VITRO*

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ABSTRACT

The aim of the present study was to explore the suitability of β-tricalcium phosphate (β-TCP) microspheres for bone regeneration and bone repair. β-tricalcium phosphate (β-TCP) wasextracted from calcium carbonate coral sand by hydrothermal conversion method. Chemical test, FTIR study and EDS analysis confirmed the presence of calcium and phosphate functional groups in the extracted β-TCP. Presence of β-TCP in theextracted sample was confirmed by complexometrictitrationusing EDTA. β-TCP microspheres were prepared by single emulsion technique and loaded with Raloxifene hydrochloride (RLH) by dipping method. Micromeritic properties of the prepared spherical microspheres were well within the limit. The porous structure of β-TCP microspheres was confirmed by a scanning electron microscope studies (SEM) and suitable to load and adsorbs the drug. Drug has affinity towards calcium and released from the β-TCP microspheres through slow degradation. Drug release kinetics exhibit sustained release of the adsorbed drug for 20 d from β-TCP microspheres. From the *in vitro* study, β-TCP microspheres suitable to releases the drug to target site and it was concluded that coral beach sand applicable to release the orthopaedic drug for bone repair and regeneration.

Keywords: B-Tricalcium phosphate microspheres, EDS analysis, Raloxifene hydrochloride, Release kinetics

NANOTECHNOLOGY IS BASIC TECHNIQUES FOR DEVELOPMENT OF NOVEL DRUG DELIVERY SYSTEM

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ABSTRACT

Nanotechnology is the design, characterization, production and application of structures, devices and systems by controlling shape and size at nanometer scale. It is a multi-disciplinary subject involving the use of physics, chemistry, biology and engineering. There are two fundamentally different approaches to nanotechnology are (1) Bottom-up manufacturing involves the building of nanostructures atom by atom or molecule by molecule. This can be done in three ways: chemical synethesis, selfasembly, and positional assembly. (2) Top-down manufacturing involves starting with a larger piece of material and etching, milling,or machining a nanostructure from it by removing material. Top-down methods offer reliability and device complexity. These are higher in energy usage and produce more waste than the bottom-up method. Nanoparticles are solid colloidal particles consisting of macromolecular substances that vary in size from 10 nm to 1000 nm. The drug of interest is dissolved, entrapped, adsorbed, attached or encapsulated into the nanoparticle matrix. Depending upon the method of preparation, nanoparticle, nanospheres or nanocapsules can be obtained with different properties and release characteristics for the encapsulated therapeutic agent. NPDDSs provide methods for targeting and releasing therapeutic compound in very defined regions. There are different types of nanoparticulate system. Nanoparticulate formulation are materials, preparation of NPs, Surface Modification of NPs and Drug Loading into NPs. Characterization and Evaluation of NPs are Particle Size, molecular weight, Density, Crystallinity, Surface Charge, Hydrophobicity, Surface Properties and Surface element analysis.

Keywords: Nanotechnology, Nanometer scale, Nanoparticles, Nanostructures, Encapsulated

NOVEL ANTI-INFLAMMATORY TOPICAL NANOSPHERES GEL

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ABSTRACT

Conventional marketed flurbiprofen topical formulations do not provide effective relief due to its less optimum drug release profile. Nanospheres loaded gel can prove to be a potential formulation for topical delivery of anti-inflammatory drugs. Hence, the purpose of this research was to formulate flurbiprofen loaded nanospheres in topical gel for providing controlled release, reducing the oral side effects of the drug and for enhancing stability. Flurbiprofen nanospheres were prepared by emulsion solvent evaporation method by varying the drug-polymer (ethyl cellulose) ratio and concentration of surfactant. The physicochemical properties, the *in vitro and ex-vivo* release study for all drug loaded nanosphere were investigated. Furthermore, the optimized nanosphere formula was incorporated into gel using Carbopol 934. The results showed that flurbiprofen nanospheres were almost spherical shape having colloidal sizes with no aggregation. The drug entrapment efficiency ranged from 59.5% to 89.96%. The zeta potential values lie between -29.8 and −31.8 mV exhibiting good stability. *In vitro* and *ex-vivo* release from the optimized nanosphere gel suggested a prolonged release, following non-fickcian diffusion kinetics. *In vivo* study findings suggested that the developed flurbiprofen loaded nanosphere topical gel exhibited faster onset yet prolonged effect as compared to conventional and marketed flurbiprofen gel.

Keywords: Nanospheres, Anti-inflammatory, Flurbiprofen, Topical

SOLID AS SOLVENT"- ORGANIC SOLVENT FREE, ECO-FRIENDLY, SPECTROPHOTOMETRIC ANALYSIS OF TABLETS OF INDOMETHACIN USING MELTED DIMETHYL UREA AS SOLVENT (MIXED SOLVENCY CONCEPT)

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ABSTRACT

In the current attempt of research, novel method for spectrophotometric estimation of indomethacin in tablets using melted dimethyl urea as solvent was developed. The main objective behind research is to show "SOLIDS ALSO POSSESS SOLUBILIZING POWER". The current study deals with novel spectrophotometric analytical technique for quantitative estimation of indomethacin in tablets using melted dimethyl urea as solvent. According to the theory proposed byMaheshwari, eachand every substance possessessolubilising power, substance may be a gas, solid or liquid. Dimethyl ureaimbibes large solubilizing power to indomethacin and having approximate solubility more than 50 mg/gm of melted dimethyl urea (104 ℃) whereas aqueous solubility of indomethacin is 0.36 mg/ml at room temperature. Calibration curve of indomethacin was plotted by recording the absorbances of standard solutions of drug. The absorbances were observed at 320 nm against respective reagent blanks. The percent label claims were found very close to 100 (100.45±0.986 and 101.33±1.445)) indicating accuracy of the proposed method. Percent recoveries estimated by the proposed method are close to 100 (98.08±0.666 to 100.22±0.907)with significant low values of percentage deviation and standard error. Thus, it may be concluded that proposed method is simple, safe and precise and excludes use of toxic organic solvents.

Keywords: Mixed solvency, Solubilizing power, Spectrophotometric analysis, Indomethacin, Dimethyl urea

FORMULATION AND EVALUATION OF OFLOXACIN FLOATING TABLET USING QUALITY BY DESIGN APPROACH

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ABSTRACT

The aimof the present study was the development of a floating tablet of ofloxacin by direct compression method using quality by design principle. It describes the use of Quality by Design to ensure the quality of Pharmaceutical product. Risk assessment was performed with failure modes and effect analysis (FMEA) methodology. The quality attributes and variables were identified for each formulation unit which were required to be considered. Floating of the tablet and cumulative drug release were taken as critical quality attributes (CQA). It is based on the ICH Guidelines, which includes Q8 for pharmaceutical development, Q9 for quality risk management, Q10 for pharmaceutical quality systems. Experimentation trials were designed in such a manner so allcritical material attributes (CMA) and critical process parameters (CPP) were considered. All the key elements of Quality by design (QbD) were covered while performing the experimentation. The main objective of the pharmaceutical development is to design a quality product and its manufacturing process to consistently deliver the intended performance of the product. It could be concluded that a promising ofloxacin floating tablet was successfully designed using Quality by design approach.

Keywords: Quality by design, ICH guidelines, Floating tablet, Critical quality attributes

DEVELOPMENT OF ACYCLOVIR LOADED MICROSPHERES FOR SUSTAINED RELEASE OPHTHALMIC DRUG DELIVERY

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ABSTRACT

The topical ocular drug delivery suffers from many shortcomings, i.e., rapid drainage, tear dilution, low permeation and bioavailability, hence requirement of frequent drug administration leading to poor patient compliance. Therefore, it was aimed to develop polymeric microspheres based ophthalmic formulation of acyclovir. The drug loaded polymeric microspheres were prepared by the solvent evaporation method using poly lactic-co-glycolic acid (PLGA) as a drug loading polymer. The formulation was evaluated for drug content, rheological properties, *in vitro* drug release, muco-adhesion, isotonicity and ocular irritancy. The particle size was optimized by varying homogenization speed and the mean particle size (M_n) of the microspheres was found to be 2.3 µm. The surface morphology of prepared microspheres was characterized by scanning electron microscopy. The drug encapsulation efficiency was increased with increase in polymer concentration. The prepared microsphere exhibited prolonged drug release. Sodium alginate was used as mucoadhesive polymer to enhance the precorneal residence time at the surface of the eye. Muco-adhesion study by texture analyzer showed that the formulation was well adhered to the corneal surface as compared to marketed eye drop. The developed formulation was also found to isotonic and non-irritant to the eye in ocular irritancy test (HET-CAM test). Therefore, it was concluded that developed microsphere based sustained release ophthalmic formulation can be a better alternative to the conventionally available acyclovir formulations.

Keywords: Acyclovir, Microsphere, Ophthalmic drug delivery, Sustained release, Mucoadhesive

DEVELOPMENT OF ESSENTIAL OILS BASED HERBAL DENTAL GEL FOR TREATMENT OF PERIODONTAL DISEASES

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ABSTRACT

Dental ailments are frequently encountered health problems in human being throughout the world. There are various dental diseases such as pyorrhoea, dental caries and oral candidiasis which generally occur due to improper cleaning of teeth. Natural remedies are more acceptable in the belief that they are safer with fewer side effects than synthetic ones. Herbal drugs cannot be directly used as in its crude form, rather needs to be formulated in a specific dosage form,e. g., tooth powder, mouthwash, gel etc. The present research work aims to formulate and evaluate the herbal dental gel containing clove oil and eucalyptus oil havingbactericidal activity in mouth, reducing plaque, and preventing gum diseases. The herbal dental gelwas formulated using carbopol 934 and gumtragacanthasgelling agents, NaOH asneutralizing agent, menthol and camphoras analgesic and counter irritant. The formulated dental gel was evaluated for physical and anti-microbial activity. The appearance was found to be transparent, homogeneous withgood spreadability and no grittiness. In antimicrobial test, number of microbial colonies observed in Plate-A (Blank), Plate-B (Test) and Plate-C (Reference) were 9, 5 and 4 respectively, which confirms that the antimicrobial activity of developed formulation is comparable to marketed product. **Thus, has a good scope in future in natural remedies for dental health of public.**

Keywords: Clove oil, Eucalyptus oil, Menthol, Carbopol 934, Anti-microbial activity

PHARMACOPHORE BASED DRUG DESIGN AND SYNTHESIS OF ONCOLOGICAL HYBRID INHIBITORS

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ABSTRACT

We, herein report a well established method used to design 13 novel compounds by studying the scaffold via Sitemap and then docking the hypothesized compounds with VEGFR receptor PDB ID 4ASE by using glide (Schrodinger LLC) and were then synthesized aiming at developing a potent anti-neoplastic agent which could act on different scaffolds simultaneously to show anti-angiogenic effects with improved binding affinity available along with good pharmacokinetic profile to reduce cytotoxic effects as associated with the conventional anti-angiogenic drugs. Benzimidazole and oxindole are one of the most recent molecules tested for anticancer potential and also considered to be biologically active moiety. A series of new 2-oxindole substituted benzimidazole derivatives (5a-m) as anti-cancerous compounds was synthesized and identified of their spectral and elemental analysis via ultraviolet (UV)-visible, Infrared (IR) spectroscopy and ^{1}H NMR (nuclear magnetic resonance). The (Z)-1-((1H-benzo[d]imidazol-2-yl)methyl)-3-(3-chlorobenzylidene) indolin-2-one presented remarkable antitumor activity against MCF-7 cell line (IC_{50} = 0.7μM) and 5b against all three cell lines [MCF-7 (IC_{50} = 0.7μM), A549 (IC_{50} = 14.5μM), HepG-2 (IC_{50} = 26.31μM) with lower or no toxicity as validated by QikProp. The compounds 5d, 5b, 5f and 5h were active against MCF-7 and 5b for all cell lines.

Keywords: Benzimidazole, Anti-cancer, Pharmacophore, Computer aided drug design

SCREENING OF STEM BARK EXTRACT OF *BAUHINIA VARIEGATA* LINN. FOR PHYTOCHEMICAL CONSTITUENTS AND ANXIOLYTIC ACTIVITY

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ABSTRACT

The current study was designed to evaluate the antianxiety activity of stem bark extract of *Bauhinia variegate. Bauhinia variegate,* commonlycalled orchid tree, belongs to the family Leguminosae. The methanolic extract of *Bauhinia variegata* (MEBV) revealed the presence of carbohydrates, proteins, tannins, steroids, triterpenoids and flavonoids. Various CNS models were used to screen the extract for antianxiety activity. The effect of dried stem bark of *Bauhinia variegata* (200 mg/kg and 400 mg/kg) on Wistar albino rats (n=6)was evaluated using Elevated Plus Maze, Light and Dark Box, Restrained Stress Model and Novelty Suppressed Feeding Test and was statistically analyzed using ONE WAY ANOVA followed by Dunnett's test. Oral administration of the methanolic extract of *Bauhinia variegata* (200 mg/kg and 400 mg/kg) showed significant increase in %OAE and %TSOA values for Elevated Plus Maze, and in the number of Entries in Light and Time spent in Lightin Light and Dark Box. These results were supported by the significant increase in %OAE and %TSOA and NEL and TSL values observed when the rats were subjected to the Restraint Stress test. Novelty suppressed feeding behavior test showed significantly lower values for latency to feed. Thus, from the present study, it may be concluded that MEBV at a dose of 400 mg/kg possesses significant anti-anxiety activity.

Keywords: Anova-analysis of variance, %OAE-percentage of open arm entries, %TSOA-percentage of time spent in open arm, NEL-number of entries in light, TSL-Time spent in light

RECOGNITION OF DPP-IV INHIBITORS USING *IN SILICO* APPROACH FOR TREATMENT OF TYPE2 DIABETES MELLITUS

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ABSTRACT

Type2 diabetes mellitus is a metabolic health problem worldwide moving the proportion in population. The present scenario of drugs for the cure of TypeII DM have severe side effects and thus, emphasize further need to develop some novel site selective as well as site specific therapies. DPP-IV (PDB ID: 2ONC) signifies an attention-grabbing target for developing novel antidiabetic agents. In this paper, Structure based virtual screening of DPP-IV target using rational drug design to evaluated promising candidate compounds and their further ADME, binding energy prediction supported the filtering-out approach of undesirable compounds. The key residues of the binding pocket of target were analyzed by reported crystal structure of protein with alogliptin as essential and were associated in the interactions with the potential hit(s). In addition, the most competent hit was evaluated by 10ns molecular dynamics simulation, which showed a root mean square deviation and root mean square fluctuation of protein-ligand complex. These MD simulation exercise signifies the stability of protein-ligand docked complex. In SBVS of chembridge compound library, we were analyzed, the main structural component of retrieved candidate compounds for better picture of protein ligand interactions named as; hydrophilic region, hydrophobic region, essentiality of electron withdrawing or electron donating groups etc. This work optimistically provide space for designing of novel hits in lead(s) discovery direction.

Keywords: Diabetes mellitus, DPP-IV, ADME, MD simulation, SBVS

SYNTHESIS OF 1-(1*H*-BENZO[D]IMIDAZOL-2-YL) ETHANONES AS POTENTIAL ANTICANCER AGENTS

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ABSTRACT

Over the past few decades, the incidence of cancer has been increasing dramatically. The main problem in cancer chemotherapy is the severe toxic effects of anti cancer drugs on healthy tissues. Keeping this in mind, we have designed and prepared sixteen new benzimidazole heterocyclic compounds with more potency and lesser side effect. The starting material, 1-(1*H*-benzo[d]imidazol-2-yl)ethanone, was reacted with 1,2-dibromoethane to get desired intermediate, then this intermediate was condensed with different secondary and primary amines in the presence of sodium acetate in ethanol to furnish two different series of 1-{(1-substituted-ethyl)-1*H*-benzo[*d*]imidazol-2-yl}ethanone and 1-(2-bromoethyl)-2-(1-substituted-hydrazonoethyl)-1*H*-benzo[*d*]imidazole, respectively. The preparation involved multi-step green synthesis methods utilizing scientific microwave synthesizer. The final compounds were structurally elucidated on the basis of spectral data and elemental analysis results. The compounds were evaluated for their *in vitro* anticancer activity at the National Cancer Institute (NCI), USA, according to their applied protocol at a single dose ($1x10^{-5}$M) against full NCI 60 cell panel. The results of anticancer activity indicated that the groups like adenine, guanine, triazole, and morpholine ring fused with benzimidazole nucleous (as Bendamustine ring) showed the potential anticancer activity. It is conceivable that further derivatization could result in the development of potential and safer anticancer agents.

Keywords: Cancer chemotherapy**,** Anti cancer drugs, Multi-step green synthesis

SYNERGISTIC ACTIVITY OF *CARUM COPTICUM* ESSENTIAL OIL AND ANTIBIOTICS AGAINST MULTI-DRUG RESISTANT *PSEUDOMONAS AERUGINOSA*

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ABSTRACT

We have utilised, a combinatorial approach using *Carum copticum* essential oil and different antibiotics to target multidrug resistant clinical strains of *Pseudomonas aeruginosa*. The activity of commonly used antibiotics was tested against three clinical strains of *P. aeruginosa* (YU-V10, YU-V28 and YU-V31) and a reference strain *P. aeruginosa* PAO1. Antibacterial activity of essential oil and antibiotics separately were determined by Kirby Bauer disc diffusion method. The combinatorial effect of essential oil (EO) with levofloxacin, ceftriaxone and tobramycin was studied by checker board broth dilution assay. Fractional inhibitory concentration (FIC) was calculated for each antibiotic in each combination. For the combinations showing synergy, the time kill assay was performed. Data generated was analyzed for FIC index. The results highlighted the occurrence of synergism between EO-levofloxacin, EO-ceftriaxone and EO-tobramycin against YU-V10, YU-V31 and PAO1. EO-levofloxacin and EO-tobramycin combinations showed synergistic activity against YU-V31 and PAO1 (FICI 0.375) and showed additive effect against YU-V10 (FICI 0.75). EO-ceftriaxone showed additive activity. In the time kill assay, effect of drug combinations on bacteria in the early stage of growth showed significant increase and with increase in time showed significant inhibition in the bacterial growth compared to control. MDR strains (YU-V10 and YU-V28) also showed significant reduction in tested concentration. Hence, *Carum copticum* essential oil and its components can be used synergistically with conventional antibiotics to improve the efficacy of antibiotic treatment against multidrug resistant *P. aeruginosa* infections.

Keywords: *Pseudomonas aeruginosa*, Synergism, Essential oil, *Carum copticum*, Drug resistance

EFFECTIVENESS OF EDUCATIONAL INTERVENTION IN IMPROVING PERSONAL HYGIENE AMONG URBAN PRIMARY SCHOOL CHILDREN–A KAP STUDY

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ABSTRACT

Hygiene practices in early childhood education are very essential. In developing countries there is an increased burden of communicable diseases among children due to poor personal hygiene. Our study aimed to assess the effectiveness of intervention in improving the knowledge, attitude and practice on personal hygiene among urban primary school children. This prospective interventional study was conducted amongst 2 government and 2 private schoolsin Bengaluru. The schools were selected using multistage random sampling method. At 95% confidence interval (CI) sample size was 357. The students belonging to the classes 3rd, 4th, 5th and 6thwere interviewed for both pre-test and post-testusing a structured questionnaire. The questionnaire was validated using Cronbach's alpha and the score was 0.71. Respondents were assessed for their initial knowledge, attitude and practice towards personal hygiene in pre-test, followed by a planned teaching program. Post-test was administered to the same population after a period of one month. Descriptive statistics and paired sample T-test were applied to find the correlation within the groups. Based on gender distribution the boys in government and private schools were 43.37% and 53% whereas girls were 56.63% and 47% respectively. The post scores for government and private schools were found to be 98.5% and 94.6% for knowledge, 84.3% and 85.2% for attitude, 97.75% and 97.8% for practice. Our study demonstrated significant improvements in the knowledge, attitude and practice from the baseline. In futurewe recommend periodic awareness regarding personal hygiene in communities to reduce the prevalence of communicable diseases.

Keywords: Personal hygiene, Children, KAP

FORMULATION AND EVALUATION OF CHEWABLE TABLETS CONTAINING AQUEOUS EXTRACT OF ZINGIBER OFFICINALE

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ABSTRACT

Ginger, the rhizome of Zingiber officinale, species of the ginger family Zingiberaceae has a long history of medicinal use for more than 2000 y as one of the most versatile medicinal plants having a wide spectrum of biological activity and a common condiment for various foods and beverages. Currently, there is a renewed interest in ginger, and several scientific investigations aimed at isolation, identification of active constituents, scientific verification of its pharmacological actions for treatment of several diseases and conditions. The chemicals responsible for medicinal properties of ginger are considerably variable, main components are gingerol, paradol, shogaols and their homologous which are responsible for its pungent taste. Ginger is used as a food and medicine and as an aromatic, carminative, expectorant in cough and cold, antiemetic and digestive and as common herbal remedy. It is also useful in sore throat and other infectious diseases. Chewable tablets are among the convenient dosage forms which patients prefer due to their advantages. Chewable tablets are the tablets which are required to be chewed or broken in between the teeth before ingestion. This study was aimed at formulating the aqueous extract of ginger rhizome to chewable tablet using syrup (66.7%). In the present research work, the chewable tablets of ginger were prepared by wet granulation. Compression of chewable tablets was done by Karnavati lab scale tablet compression machine. The pre-compression parameters assessed for the granules produced include angle of repose, bulk and tapped density, Carr's index, Housner's ratio. Compressed tablets were evaluated for thickness, hardness, friability, disintegration time and dissolution time.

Keywords: *Zingiber officinale*, Aqueous extract, Syrup, Chewable tablet

PHARMACOLOGICAL INVESTIGATION OF MARKETED WEIGHT GAINPRODUCTS AND FOOD SUPPLEMENT ON RATS

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ABSTRACT

To evaluate the effects of marketed weight gain products and food supplement on CNS of rats. Wistar albino rats of either sex weighing 150-250 gm were used to study the effect of marketed weight gain products and supplement on anxiety, learning and memory, muscle co-ordination, spontaneous behaviour. The following methods were usedelevated plus maze model, Light and Dark Apparatus for anxiety, rotarod test for evaluating effect on muscle coordination, auto-track system for evaluating spontaneous behaviour while learning and memory was evaluated using Morris water maze. Weight gain product tested in the study showed effects on CNS of rats been anti-anxiety effect, improving learning and memory, CNS depressant effect, and better muscle co-ordination activity. Since weight gain product commonly used by the population has effects on CNS of rats. This suggests that such weight gain products can possibly have effects on CNS in humans and therefore should be used after proper medical advice.

Keywords: Learning and memory, Weight gain, Food supplement

DESIGN AND EVALUATION OF CEFUROXIME AXETIL FLOATING MICROBALLOONS

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ABSTRACT

The aim of this study was to formulate and evaluate floating microballoons for controlled drug release of Cefuroxime axetil. Cefuroxime axetil microballoons were prepared by emulsion solvent diffusion method with Eudragit RS100 using methanol, as a solvent. Further, the low-density granular pellets were subjected to microencapsulation by an emulsion evaporation technique using ethyl cellulose 7 cps and eudragit S 100 as coating polymers and 1% w/v poly vinyl alcohol as aqueous phase. The prepared microballoons were characterized for their particle size analysis, angle of repose, and compressibility index. The *in vitro* release studies were performed in 0.1 N HCl as medium. The prepared microballoons were free-flowing and spherical in shape. From all the formulations, F3 can be considered as promising controlled release floating microballoons of Cefuroxime axetil providing first-order release over a period of 12 h, with a minimum floating lag time of 1 minute. It was found that the ratio of the drug and polymer, stirring speed, and concentration of surfactant were the most significant variables which influenced the size of the cefuroxime axetil microballoons under the applied experimental conditions.

Keywords: Cefuroxime axetil, Floating microballoons, Controlled release, Eudragit S 100

EFFECTIVENESS OF PRP IN ANDROGENIC ALOPECIA

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ABSTRACT

Androgenic alopecia (AGA) is a hair loss disorder affecting 80% of men and 50% of women throughout their lifetime. Therapies for AGA are limited and there is established pharmacological cure till date. However, there is a high demand for hair restoration. Platelet-Rich Plasma (PRP) therapy, a treatment modality shown to promote wound healing, has also been explored as a treatment for AGA. This literature review was conducted to assess the effectiveness of PRP treatment for AGA. Twelve studies conducted from 2011 to 2017 were evaluated and summarized by study characteristics, mode of preparation, and treatment protocols. A total of 295 subjects were given PRP in these studies, and evaluated for terminal hair density, hair quality, anagen/telogen hair ratio, keratinocyte proliferation, blood vessel density, etc. some studies also provided subject self-assessment reports. Most of the studies reviewed showed effectiveness of PRP in increasing terminal hair density/diameter. Additional investigations are needed to determine the optimal treatment regimen for high efficacy of PRP in AGA, However PRP has been proved to be the next generation treatment modality for AGA.

Keywords: Androgenic alopecia, Platelet-rich plasma therapy, Hair loss

SIMULTANEOUS ESTIMATION OF METFORMIN AND GLIMIPRIDE IN BULK AND PHARMACEUTICALS BY RP-HPLC METHOD

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ABSTRACT

A simple reserve phase liquid chromatography (RP-HPLC) method has been developed and subsequently validated for the determination of metformin and glimipride in bulk and its pharmaceutical formulation. Separation was achieved with an Inertsil ODS column, 250 mm x 4.6 mm (particles with 5µm). A mixture of phosphate buffer (pH 5.8) and acetonitrile (70:30) as mobile phase at a flow rate of 1 ml/min and the column temperature was maintained at 26. Dual wavelength detector was performed at 210 nm and 230 nm. The sample temperature was maintained at 5 with a run time of 5 min. The method was rapid, simple and sensitive. The described method for the determination of Metformin and glimipride is linear in the range of 10-50 µg/ml and 01-05 µg/ml with correlation coefficient of 0.999 and 0.995 respectively for both metformin and glimipride. The method enables accurate, precise and rapid analysis of Metformin and Glimipride. It can be conveniently adopted for routine quality control analysis of bulk and pharmaceutical formulation.

Keywords: HPLC, Diabetes, Metformin, Glimipride

EVALUATION OF ANTIARTHRITIC EFFECT OF OYSTER MUSHROOM *PLEUROTUS OSTREATUS* CV. FLORIDA ON COMPLETE FREUD ADJUVANT INDUCED ARTHRITIS IN RATS

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ABSTRACT

Pleurotus mushrooms have been used from prehistoric time. These mushrooms are recognized for nutritional value and pharmacological activities like antioxidant, antidiabetic, antihelminthic, antimicrobial effect etc. The present study was focused to evaluate antiarthritic effect of hydroethanolic extract of *Pleurotus ostreatus cv. Florida*. The hydroethanolic extract of *Pleurotus ostreatus cv.* Florida subjected to tested against adjuvant induce arthritis in rat models. Arthritis was induced by administration of Complete Freund's Adjuvant into subplantar surface of left paw of rats. The extract was given orally at dose 200 mg/kg and 400 mg/kg and piroxicam was administered intraperitonially (4 mg/kg). The *in vitro* testing on parameters like antiproteinestrase, albumin denaturation and heat induce haemolysis were also studied. There was significance ($p<0.001$) decrease in proteinase activity and also stabilized the memberane. *In vivo* studies on *Pleurotus ostreatus cv.* Florida extract treated rat showed a significant ($p<0.001$) decrease in paw volume, joint diameter and spontaneous changes in body weight recorded for 21 d. The treatment also results in increase in gripping activity of rat compared to arthritic control rat. The X-ray examinations showed a decrease in joint swelling. The histopathological examination of extract treated group shows significant decrease in joint space. There was also an increase in antibody levels. The antioxidant parameters shows the significant ($p<0.001$) increase in enzyme level (superoxide dismutase and catalase) Thus *Pleurotus ostreatus cv.* Florida extract shows potent antioxidant activity in rat model. It can be concluded that the *Pleurotus ostreatus cv.* Florida extract contains medicinally important constituents which showed antiarthritic activity in rats.

Keywords: *Pleurotus ostreatus CV.* Florida, inflammation, arthritis, Paw volume, X ray

VALIDATION OF DEVELOPED ANALYTICAL METHOD FOR ESTIMATION OF HALCINONIDE IN BULK AND CREAM DOSAGE FORM

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ABSTRACT

The main objective of the present research work was to validate a developed analytical method using RP-HPLC and HPTLC for the estimation of Halcinonide in bulk and cream dosage form. The estimation of drug was performed on HPTLC aluminium plates precoated with silica gel 60 F254 using Cyclohexane: Ethyl acetate (5:5 v/v) as a mobile phase. The densitometric quantification for the drug was carried out at 238 nm. Halcinonide obeyed linearity in concentration range 400-2400 ng/band with coefficient of correlation 0.997. The Rf for halcinonide was found to be 0.53±0.02. The method was validated for accuracy, precision and ruggedness. Accuracy of the method was checked by recovery studies at three different levels i.e. 80 %, 100 % and 120 %. To our knowledge there is no literature evidence present for determination of halcinonide in bulk and cream formulation using derivative spectrophotometric by solubility enhancement technique. Therefore, our endeavor was to establish zero order and first order derivative spectrophotometry using amplitude and also Area under curve (AUC) techniques. It involves the calculation of integrated value of area with respect to the wavelength between the two selected wavelengths 233 nm and 249 nm.

Keywords: Halcinonide, RP-HPLC, HPTLC, ICH guidelines, Validation

DEVELOPMENT OF RP-HPLC METHOD FOR STANDARDIZATION OF *AEGLE MARMELOS* (L.)

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ABSTRACT

In recent times, focus on plant research has increased all over the world and several evidences have been collected to show immense potential of medicinal plants used in various traditional systems. Over the last few years, researches have aimed at identifying and validating plant derived substances for the treatment of various diseases. The bael (*Aegle marmelos*) (L.) is an Indian plant, which has enormous traditional uses against various diseases. The present work aims to compile marmelosin based standardization of *Aegle marmelos,* generated through the research activity using RP-HPLC as a tool. The method developed was found to be accurate, precise and simple for the stated purpose and can be used routinely for standardization of crude fruit extract and herbal formulations containing it.

Keywords: *Aegle marmelos*, Marmelosin, RP-HPLC

DEVELOPMENT OF RP-HPLC METHOD FOR STANDARDIZATION OF *AEGLE MARMELOS* (L.)

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ABSTRACT

Aegle marmelos, also known as Bale tree, is a moderate sized, slender, aromatic tree, growing wild throughout the deciduous forests of India. This is generally considered assacred tree by the Hindus, as its leaves are offered to Lord Shiva during worship. Bale fruits are yellowish green, with small dots on the outer surface, oblong to globs, 5.3 cm to 7.2 cm in diameter; weight, 77.2 g; pulp, yellow and mucilaginous, the pulp of dried fruits retains its yellow colour, and also remains intact; rind woody, 4 to 5 mm thick. Various chemical constituents were found in bael such as alkaloids, coumarins, steroids, polysaccharides, tannins, carotenoids etc. Alkaloids: Agelin, aegelenine, marmeline, dictamine, fragrine, O-methylhalfordinine, O-isopentanylhalford iniol, N-4-methoxy styryl cinnamide. Coumarins: Marmelosin, marmesin, imperatorin, marmin, alloimperatorin, methylether, xanthotoxol, scoparone, scopoletin, umbelliferone, psoralen and marmelide. Polysaccharides: Galactose, arabinose, uronic acid and L-rhamnose was obtained on hydrolysis. Tannin: Tannin was also present in leaves and fruit as skimmianine. Carotenoids were also reported, which impart pale color to fruit. *Aegle marmelos* proved various activities such as anti-diabetic activity, hepatoprotective activity, antimicrobial activity, analgesic, anti-inflammatory, ntipyretic activity, antifungal activity and anticancer activity.The present work is focused to develop method for standardization of *Aegle marmelos* (bael) fruit pulp used in many herbal preparations, on the basis of marmelosin-a major chemical constituent present. Fruits of *Aegle marmelos* were collected from local market. The fruit pulp was dried under shade at room temperature for 30 d and kept in incubator at 35 °C for 15 d. Dried fruit pulp was powdered, sieved and stored in air tight container until use. Chemicals: Reference standard of *marmelosin* was obtained from UICT, Mumbai (Maharashtra, India). All the chemicals used in this study were AR Grade.

Keywords: *Aegle marmelos,* Marmelosin*,* Standardization

NOVEL BILAYERED TABLET OF ROSUVASTATIN CALCIUM AND ASPIRIN IN THE TREATMENT OF HYPERLIPIDAEMIA

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ABSTRACT

Hyperlipidaemia is a disorder characterised by abnormal increase in the levels of lipids in the blood stream, which includes cholesterol ester, phospholipids, triglycerides, or plasma lipoproteins which includes, very low-density lipoproteins, low-density lipoproteins along with reducedHigh-density lipoproteins. Anti-hyperlipidaemia drugs used for treating hyperlipidaemia are fibrates, niacin, bile acid sequestrants, cholesterol absorption inhibitor, and statins. Among different anti-hyperlipidaemia drugs, statins are the most efficacious anti-hyperlipidaemia drugs. Atorvastatin, Lovastatin, Simvastatin and Rosuvastatin are the HMG C-oA reductase inhibitors. Among statins, Rosuvastatin calcium is the most potent HMG C-oA reductase inhibitor with long plasma half-life of 19 h and Aspirin is used as a secondary prevention regimen in preventing heart attack and preventing death due to unstable angina. Hence Rosuvastatin calcium and Aspirin are used, but Rosuvastatin calcium and aspirin belong to BCS Class II and Class IV respectively. Various novel technologies like Liquid-liquid compaction and solid dispersion were used to increase the solubility of both drugs and both were formulated into an enteric coated bilayer tablet. *In vitro* drug release profile and stability studies showed that the formulation was suitable for oral drug delivery system with enhanced bioavailability of Rosuvastatin calcium. The prepared solid dispersion of aspirin shows enhanced solubility and bioavailability of drug by decreasing its crystallinity. The combination therapy gives synergistic effect as anti-hyperlipidaemic and anti-coagulant to treat and prevent hyperlipidaemia. The prepared enteric coated bilayer tablet of Rosuvastatin calcium and Aspirin gives promising result as compared to marketed product.

Keywords: Hyperlipidaemia, Rosuvastatin calcium, Aspirin, Liquid-liquid compaction, Solid dispersion, Bilayer tablet

FORMULATION AND EVALUATION OF MODIFIED RELEASE TABLET: A TRIPLE LAYER TABLET FOR TREATMENT OF *HELICOBACTER PYLORI* INDUCED PEPTIC ULCER

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ABSTRACT

Helicobacter pylori is the organism majorly responsible for inducing peptic ulcer, affecting nearly half of the world's population. Several antimicrobial agents eg: Amoxicillin, Clarithromycin, Levofloxacin, Moxifloxacin, Rifabutin, have been investigated for their anti-*H. pylori* activity. Furthermore it has been reported that co-administration of antacid with antimicrobial agents is more effective for treatment of *H. pylori* induced peptic ulcer. Currently, there are no marketed formulations containing fixed dose combination of antimicrobial agent and antacid. In this study, a novel triple layered tablet was formulated. The layers consist of Moxifloxacin Hydrochloride in a gastroretentive layer, sodium bicarbonate and croscarmellose in an effervescent layer and Pantoprazole Sodium in a delayed and sustained release layer. Thus the formulation provided solution for delivering two different therapeutic agents at different site. Combination of various polymers viz. Xanthan gum, Sodium Alginate and various grade of HPMC, HPMCP HP55, Eudragit L-100 55 were optimized for the Gastroretentive layer and the delayed and sustained release layer. The tri-layered tablet was evaluated for parameters physical parameters, splitting time, lag time, floating time, disintegration in 0.1N Hydrochloric acid and Phosphate buffer (pH 6.8), drug content, *in vitro* dissolution study and stability studies. Optimized formula showed *in vitro* release of Moxifloxacin hydrochloride for 6 h and Pantoprazole sodium for 9 h and floating time 12 h. Thus ensuring moxifloxacin hydrochloride gastroretentive layer in the stomach and release of pantoprazole sodium in the small intestine for prolonged period.

Keywords: *H. Pylori,* Layered tablet, Gastroretentive, Sustained, Moxifloxacin hydrochloride, Pantoprazole sodium

KNOWLEDGE AND AWARENESS OF DENTAL CARE PROVIDERS TOWARDS ATTENTION DEFICIT HYPERACTIVITY DISORDER

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ABSTRACT

The overall aim of this study is to improve our understanding regarding Attention deficit hyperactivity disorder (ADHD) awareness among Dental Care Providersof Ajman University (AU), also to identify factors that are highly associated with an increased awareness towards ADHD. The objectives of the study are to assess the awareness of the Dental Care Providersof Ajman University regarding Attention deficit hyperactivity disorder and identify factors that influence the awareness regarding Attention deficit hyperactivity disorder. This is a cross-sectional survey study designed and carried out among convenience sample of Dental Care Providers. The survey was carried out by using a self administrated questionnaire. The later was composed into demographic, socio-economic, and Attention deficit hyperactivity disorder information. The study demonstrates low level of awareness towards Attention deficit hyperactivity disorder. Moreover, participants who provided treatment for a patient with ADHD were found to exhibit higher degree of awareness towards Attention deficit hyperactivity disorder. The existing results will be used in developing a well planned program and clear polices to increase the level of awareness regarding Attention deficit hyperactivity disorder.

Keywords: Knowledge, Attention deficit, Hyperactivity disorder, Dental care

PREPARATION, EVALUATION AND CHARECTERIZATION OF SILK FIBROIN NANOSPHERES LOADED WITH TELMISARTAN FOR DRUG DELIVERY SYSTEMS

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ABSTRACT

Silk fibroin (SF) protein obtained from mulberry silkworms of *Bombyx mori* is a protein based biomacromolecule. SF has been generally studied in biomedical utilization regarding its bio-degradability and bio-compatibility. The aim of this work was to formulate SF nanospheres for drug delivery application. SF nanosphere's (NS) loaded with telmisartan (TS), were prepared by nanoprecipitation method. The drug was dissolved in aqueous solution of SF by using acetone as a non-solvent. The evaluation results of SFNS loaded of TS showed 74.22±0.17 % entrapment efficiency, 35.21±0.02 % of drug loading, and-7.9 mV to-16.6 mV of zeta potential due to the proper bounding of telmisartan with the β-sheets of silk fibroin the particle size was within the size range of 140-180 nm were spherical in shape and had a smooth surface. The SFNS pattern switched from random coil to β-sheet formation on treatment with acetone. FTIR and DSC studies marked no such intermolecular interactions between SF and drug molecules. The %cumulative *in vitro* drug release from SFNS exhibited rapid burst release. The *in vitro* cumulative drug release of SFNS of TS it was found that about 72 % of drug was released within 8 h and about 89 % of drug released at the end of 24 hr. The rate of drug release increased with the increase in SF ratio. All these results proposed that SF nanospheres are eventuality handy in various drug delivery systems.

Keywords: *Bombyx Mori*, Silk fibroin, Telmisartan, Nanospheres, Drug delivery

NANOSTRUCTURED LIPID CARRIER (NLC) FOR SUSTAINED DELIVERY OF ANTISEIZURES DRUG

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ABSTRACT

The aim of the study is to prepare nanostructured lipid carriers (NLCs) for phenytoin for sustained delivery of the drug. Rationale for selection of NLCs is that it has overcomed many backlogs concerned with conventional lipid based formulations such as physical instability, limited loading capacity of drug, drug discharge while storage along with all possible hurdles resulting in poor absorption of highly lipophilic drugs as NLCs are a blend of solid and liquid lipids due to which it has dominance over other lipid based formulations. Phenytoin is used as an anti-seizures drug used for treatment of different types of seizures. It is also used for certain neuropathic pain. FDA approved natural lipids like cetyl palmitate and oleic acid was used for the preparation of nanostructured lipid carriers (NLCs) for better and sustained delivery of anti-seizures agent. Nanostructured lipid carriers of cetyl palmitate and oleic acid were prepared by hot homogenization and sonication technique using Pluronic F-68 as surfactant and Soya lecithin. Formulations were optimized for their size by varying the concentration of Soya lecithin. The optimized formulation was found to be at the concentration of 1% of Pluronic F-68 w/v and Soya lecithin at 0.04%. Particle size for optimized NLCs formulated by cetyl palmitate and oleic acid was found to be in the range of 122 nm to 248 nm. The loading efficiency of the NLCs came out to be 55.4%. The release study for the anti seizures drug loaded NLCs were done for 48 h. Stability study was conducted at 25 ° C and at 4 ° C and the formulation was found to be stable. The morphology of the NLCs were studied by SEM images. The formulation was evaluated on the basis of particle size, loading efficiency, entrapment efficiency, surface morphology, and release profile.

Keywords: Nanostructured lipid carriers (Nlcs), Antiseizure drug, Cetyl palmitate, Oleic acid, Sustained delivery

IDENTIFICATION OF ANTI-CANCER STEM CELLMOLECULES BASED ON MACHINE LEARNING ANALYSIS OF CANCER HOTSPOTS

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ABSTRACT

The essential areas of molecular docking in drug designing which has two primary parts first, pose prediction and second, docking binding affinity calculation. Identifying the native pose of a complex from a set of poses generated after the docking process is one of an important issue, needed attention. Though there are many scoring functions to rank the docked poses, they do not identify the exact pose accurately which can be taken further in for drug designing. The above assessment of the limitations and issues in molecular docking creates a need for a more accurate docking method that classifies the anti-CSCs molecules with higher sensitivity and specificity. The present work reported benchmarking of freely available docking tools and generated the datasets. The training data was validated using stratified 5-fold cross-validations (CV) based on horizontal split wherein, both training and test sets contained data from targets. This 5-fold CV corresponds to an 80:20 test and training set ratio. Finally, a model has been developed which classified the molecules as actives and decoys anti-CSCs using the machine learning methods based on higher area under the Receiver Operating Characteristic Curve (ROC AUC) value. This work assessed the accurate performance of the docking method that classifies the unknown molecules as anti-CSCs or decoy.

Keywords: Molecular docking, Drug designing, anti-CSCs, Decoy

PREDICTORS ASSOCIATED WITH ADVERSE DRUG REACTIONS AMONGST GERIATRIC PATIENTS IN AN OUTPATIENT CLINIC

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ABSTRACT

The process of ageing involves an individual's structural and functional depravity of their organ systems often results in compromised pharmacological principles of the prescribed drugs. Multimorbidity and polypharmacy along with change in pharmacokinetic and pharmacodynamics responses of drugs predispose the elderly to adverse drug reactions. This was a six month prospective hospital based observational study aimed to identify and report the characteristics and incidence of ADRs amongst patients of either sex aged 60 y and above visiting the outpatient clinic at the study site. The suspected ADRs were categorized according to the Will's and Brown classification system. Causality of these ADRs was verified by applying the WHO-UMC criteria and the Naranjo's scale. Severity and preventability of the ADRs was classified using the Modified Hartwig and Seigel Scale and Modified Schumock and Thorton Scale respectively. Multivariatelogistic regression was used to determine the risk factors for developing ADRs.

Among the 365 patients monitored, 57 (15%) patients experienced 60 ADRs. Therapeutic classes of drugs frequently associated with ADRs were the drugs used in hypertension [27 (45%)]. Patients presenting with amlodipine [9 (15%)] induced pedal edema was observed with the highest frequency of ADRs. Polypharmacy [OR: 1.619, 95% CI: 0.957–2.741, P = 0.021] was observed as the influential risk factor for ADRs. Pharmacist's services and involvement in patient centered care can be associated with improved health and economic outcomes, a reduction in medicine related adverse events, improved quality of life, and reduced morbidity and mortality.

Keywords: Geriatrics, Outpatient, Adverse drug reactions

AEGLE MARMELOS AS A DISINTEGRANT IN DESIGN OF FAST DISSOLVING TABLETS

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ABSTRACT

Many patients express difficulty in swallowing tablets and hard gelatin capsules, which results in high incidence of non-compliance and ineffective therapy. Recent advances in novel drug delivery systems (NDDS) aim to enhance safety and efficacy of drug molecule by formulating a convenient dosage form for administration and to achieve better patient compliance. One such approach is fast dissolving/dispersing tablet formulation. In the present work, fast dissolving tablets of lorazepam were designed with a view to enhance patient compliance by direct compression method. In direct compression method, natural disintegrants such as mucilages of bael *(Aegle marmelos)*, sesame*(Sesamum indicum)*, dehydrated banana powder*(Musa acuminata)* were used and compared with crospovidone a synthetic superdisintegrant in different ratios and directly compressible mannitol as a diluent to enhance mouth feel. Estimation of lorazepam in the prepared tablet formulations was carried out by extracting the drug with methanoland measuring the absorbance at 230 nm. The formulations were further evaluated for hardness, friability, drug content uniformity, *in vitro* dispersion time, wetting time, water absorption ratio, *in vitro* drug release, stability studies (at 40 °C/75% relative humidity for 3 mo) and drug-excipients interaction (IR spectroscopy). Four promising formulations (one from each disintegrants) were tested for *in vitro* drug release pattern (in pH 6.8 phosphate buffer). Among the promising formulations, the formulation (FAM_3) containing mucilage of *aeglemarmelos,* has released ($t_{50\%}$1.6 min) compared to the conventional commercial formulation ($t_{50\%>}$30 min). Stability studies on the promising formulations indicated that there are no significant changes in drug content and *in vitro* dispersion time ($p<0.05$).

Keywords: Fast dissolving tablets, Lorazepam, *Aegle marmelos*, *Sesamum indicum, Musa acuminata,* Directly compressible, Mannitol, Crospovidone, Natural superdisintegrants

ANTI-OXIDANT AND ANTI-DIABETIC ACTIVITY OF A POLYHERBAL FORMULATION

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ABSTRACT

Diabetes mellitus is a metabolic disorder characterized by hyperglycemia and disturbance of carbohydrate, protein and fat metabolism. Type 2 diabetes mellitus is characterized by a progressive impairment of insulin secretion by pancreatic beta cells and by a relative decreased sensitivity of target tissues to the action of this hormone. Glucose oxidation is believed to be the main source of free radicals so diabetes is accompanied by increased production of reactive oxygen species (ROS). Increased oxidative stress is an important factor in the development of diabetes and its complications. In the past few years there is increased interest in the therapeutic potential of medicinal plants as antioxidant and hypoglycemic supplements, because of their effectiveness and minimal side effects. In this context, present study was undertaken to evaluate the anti-oxidant and anti-diabetic activity of a polyherbal formulation containing hydro-alcoholic extracts of five different herbs, that is, *Myristica fragrans, Andrographis paniculata, Gymnema sylvestre, Eugenia jambolana* and *Momordica charantia.* Treatment with the polyherbal formulation at an oral dose of 400 mg/kg for six weeks in Streptozotocin induced Type II diabetic rats produced a significant decrease in serum glucose in diabetic rats compared to control group. The antioxidant potential of polyherbal formulation was measured by DPPH (1, 1-Diphenyl, 2-picryl-hydrazyl) free radical scavenging assay at 515 nm and IC_{50} value of the polyherbal formulation was determined. The study indicated that the polyherbal formulation had significant anti-diabetic activity and good anti-oxidant potential.

Keywords: Anti-diabetic, Anti-oxidant, Polyherbal, Type 2 diabetes

NOVEL ANTI-CANCER DRUGS FROM MARINE SOURCES: A REVIEW

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ABSTRACT

Cancer is defined as a group of diseases characterised by the uncontrolled growth and spread of abnormal cells. Marine secondary metabolites are promising source of exploited drugs that have a wide structural diversity and have shown variety of biological activity. Ziconotide, eribulin, brentuximab are marine sourced drugs for cancer approved for human use. Eribulin had become important chemotherapy for cancer as it includes apoptosis of cancer cells.

Keywords: Marine compounds, Anti-cancer drugs, Cytotoxic drugs

FORMULATION AND DEVELOPMENT OF DOXORUBICIN LOADED POLYMERIC NANOPARTICLE WAFERS FOR BRAIN TARGETING THERAPY OF GLIOMA

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ABSTRACT

Implantable wafers are a concept of implantable drug delivery system which is used for the delivery of active molecule to the targeted site. There is a major obstacle for the delivery of anti-cancer or chemo therapeutic drugs to treat brain tumor due to the presence of blood-brain barrier (BBB). In the present study, to overcome these problems,a polymeric implantable wafer was developed, in which doxorubicin (DOX) loaded PLGA nanoparticles (DOX-PLGA-NP) was prepared and compressed into wafers (DOX-PLGA-NPW) for long-term period. DOX-PLGA-NP was optimized by investigating the effect of process variables on the response using a 2-factor, 3-level full factorial (3^2) design. Effect of two independent factors, that is, polymer concentration and surfactant was studied on two dependent responses, that is, particle size and % drug entrapment. They werecharacterized by scanning electron microscopy,differential scanning calorimetry, particle size, zeta potential, % drug entrapment, drug release behavior, TEM, and cell viability. DOX-PLGA-NP were characterized for drug polymer interaction using FTIR. The developed NPs exhibited spherical shape with PDI of 0.123, and-19.3 mV zeta potential with maximum % drug entrapment of 50.42%. *In vitro* drug release showed initial burst release of the drug followed by prolonged releasefor a period of 188 h. *In vitro* cell viability study displayed a significant cytotoxicity toward C6 cell line. In view of the results so far obtained, we confirmed the possibility that DOX-PLGA-NPW as protein carriers for implantable drug delivery system for malignant glioma.

Keywords: Implantable, Wafers, Doxorubicin, Nanoparticles, Glioma

PHARMACOLOGICAL SCREENING OF METHANOLIC EXTRACT OF THE STEM BARK OF *PTEROCARPUSMARSUPIUM* ROXB

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ABSTRACT

A methanolicextract of the stem bark of *Pterocarpus marsupium* (Roxb.) was screened for neuropharmacological activities viz. antianxiety, learning and memory and spontaneous behaviour. *Pterocarpus marsupium* (Roxb.) is a deciduous tree, commonly called as Indian Kino tree or Malabar Kino belonging to family Fabaceae. The extract of the stem bark of *Pterocarpus marsupium* (Roxb.) was evaluated using Elevated Plus Maze (EPM) and Light and Dark model for antianxiety, Morris Water Maze (MWM) and Novel Object Recognition for learning and memory and Opto-Varimex Autotrack System for spontaneous behaviour activity. Methanolic extract of the stem bark, at the test doses of 100 mg/kg and 200 mg/kg, was administered to rats orally for seven days. The control used was 2% Tween 80. Diazepam (2 mg/kg) and Piracetam (200 mg/kg) were used as standard drugs. All the test results were statistically analysed using one way ANOVA by Dunnett's test and compared with the control. The extract showed increased percentage of open arm entries and time spent in the open arms of the EPM as well as increased time spent in the illuminated area of the light and dark model, indicating its anxiolytic activity. The dose of 100 mg/kg of the extract significantly improved learning and memory in the rats. The extract exhibited sedative effect as assessed by the Opto-VarimexAutotracksystem.

Keywords: Anti-anxiety, Learning and memory, Spontaneous behaviour, *Pterocarpus marsupium,* Anova-analysis of variance

TO STUDY THE EFFECT OF COMPRESSION AND COMPACTION PROPERTIES ON DISINTEGRATION OF TABLETS CONTAINING LOW ACYL GELLAN GUM AS DISINTEGRANT USING DRUGS WITH DIFFERENT SOLUBILITIES

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ABSTRACT

The purpose of the present investigation is to study effect of compression and compaction properties on rate of disintegration of tablets. In this study drugs having different physicochemical properties, mainly solubility were selected for the study. The drugs selected were diltiazem hydrochloride, amoxicillin trihydrate, paracetamol and domperidone maleate which are freely water soluble, slightly water soluble, sparingly water soluble and water insoluble respectively. In the formulation of tablet lactose and dicalcium phosphate were used as diluents(s) which are water soluble/dispersible and water insoluble respectively. In this study effect of compression pressure, thickness, packing density and tensile strength on disintegration of tablets was studied. The tablets were prepared by wet granulation method and evaluated for various tabletting properties.

Keywords: Low acyl gellan gum, Compression, Disintegration

A SYSTEMATIC REVIEW ON DETERMINANTS AND RISK FACTORS OF ADVERSE DRUG REACTIONS IN ACUTE CARE SETTINGS

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ABSTRACT

Adverse drug reactions (ADRs) poses both financial and health encumbrance for patients. Although prevalence and risk factors associated with ADRs have been published in many studies, most of them lack the statistical evidence for predictors. The aim of this study was to review the published literature to determine the prevalence and risk factors in the adult and elderly population for ADRs. An electronic search of articles published in English language in databases such as Cochrane Database of Systematic Reviews, MEDLINE, EMBASE, Scopus and Google Scholar was conducted in between January 2001 to April 2018. The search terms used were: “adverse drug reactions”, “drug related problems”, “risk factors”, “general adult population”, “elderly patients” and “hospital admission”. For the inclusion in the review, studies had to include an explicit definition of what was considered an ADR and/or an explicit assessment of causality, as well as a clear description of the method used for ADR identification. In particular, studies also had to explore factors associated with an increased risk of an ADR statistically through logistic regression (univariate and multivariate). A total of 12 hospital based research studies (07 studies on elderly population and 06 studies on adult population) were identified and included. At 95% CI the mean prevalence rate of ADRs in adults and elderly were 15.4% and 23.9% respectively. This variation in prevalence of ADRs was attributed due to the factors like female gender, elderly age group and comorbidities.

Keywords: Adverse drug reactions, Risk factors, Predictors

QUALITY OF LIFE IN WOMEN WITH POLYCYSTIC OVARIAN SYNDROME: REQUISITE OF CLINICAL PHARMACIST INTERVENTION

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ABSTRACT

Polycystic ovarian syndrome (PCOS) is a lifestyle disorder known to cause profound distress in physical and emotional wellbeing. Unawareness and ignorance among patients may be a predominant cause of compromised quality of life (QOL) that necessitates education from health care professionals. Existing study was designed to assess the impact of counselling on QOLin the above patients at a tertiary care hospital. This hospital based interventional study was carried out for a period of 6 months. A total of 83 subjects diagnosed with PCOSwere compared with 89 healthy women, recruited from the out-patient department of Endocrinology. WHO-BREF, a validated, reliabletool to assess QOLwas administered in two phases of the study, pre-interventional and post interventional period. The average age of women in study and control group were observed to be 25.54±5.18 and 22.41±3.07 y respectively. Decreased QOL was observedin the women affected with PCOSwhencompared to healthy controls, wherein the psychological domain was the most affected. Post theintervention, a positive impact was reflected as higher scores in all the four domains such as Physical Health (Domain 1): 58.45±8.79; Psychological (Domain 2): 53.457±10.71; Social Relationships (Domain 3): 58.060±13.51; Environment (Domain 4):57.34±9.80). The key factor in management is to create awareness on the complications of the disease and the life style modification to minimize severity and progression. The study findings reveal that womenwith PCOSshowed animproved QOL post participation in awareness programs imparted by the clinical pharmacists.

Keywords: Women, Polycystic ovarian syndrome, Quality of life, Clinical pharmacist

COMPARATIVE EVALUATION OF BACOPA MONERI WITH ITS MARKETED PREPARATIONS SARASWATARISHTA AND BRAHMI GHRIT FOR CENTRAL NERVOUS SYSTEM ACTIVITY IN RATS

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ABSTRACT

In present study effect of dried whole plant of *Bacopa monnieri* (Bramhi) and its marketed preparations Saraswatarishta (Sandu Pharmaceuticals and Shree Dhootpapeshwar Ltd) and Brahmighrit was compared for CNS activity. Aqueous extract of *Bacopa monnieri* was prepared by cold maceration. Pharmacological investigations of Aqeous extracts of *Bacopa moneri* and its marketed preparations Saraswatarishta and Brahmighrit was done using Elevated Plus Maze, Opto-Varimex, Auto-track System, Rotamex, Hot Plate Analgesiometer and Morris Water Maze. the activity was also compared with standard drugs like diazepam and pentazocine for muscle coordination, antianxiety and analgesic activity respectively. *In vitro* test indicated that SARD (Saraswatarishta manufactured by Dhootpapeshwar) showed significant anti-anxiety effect by the seventh day, whereas SARS (Saraswatarishta manufactured by Sandu Pharmaceuticals) did not show significant activity. The difference in activity of the two Saraswatarishtas could be due to difference in usage of the primary. Comparison between Bramhighrit and the hydro-alcoholic preparations i.e. SARS and SARD showed that the ghrit might be better in managing anxiety in comparison to Saraswatarishta. Also SARD has a better effect on memory as compared to SARS.

Keywords: Anxiety, *Bacopa moneri*, Saraswatarishta, Brahmighrit

EVALUATION OF ANTI-CATATONIC EFFECT OF STEM EXTRACTS OF *SECURINEGA LEUCOPYRUS* ON HALOPERIDOL INDUCED CATATONIA IN RATS

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ABSTRACT

The present study was undertaken to evaluate the anti-catatonic activity of methanolic and aqueous extracts of *Securinega leucopyrus* on haloperidol induced catatonia in rats. The study comprises of four groups (control, standard, aqueous stem extract, methanolic stem extract), each containing five animals. Animals in groups I, II, III and IV were administered with haloperidol to produce extra pyramidal side effects. The severity of the catatonia was evaluated by block method and is scored. The methanolic (SLME) and aqueous (SLAE) extracts have shown significant anti-catatonic effect at a dose of 100 mg/kg, p. o., showing an overall p value<0.05 when compared to other groups. SLME has more ability to reduce the extra pyramidal effects than SLAE. The results suggest that both the extracts have shown anti-catatonic activity.

Keywords: *Securinega leucopyrus*, Catatonia, Haloperidol, Block method

DEVELOPMENT AND EVALUATION OF NASAL DRUG DELIVERY SYSTEMS FOR EFFECTIVE TREATMENT OF BRAIN DISORDERS

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ABSTRACT

Systemic drug delivery in schizophrenia is a major challenge due to presence of obstacles like, blood-brain barrier and P-glycoprotein, which prohibit entry of drugs into the brain. The aim of this study was to develop quetiapine fumarate (QF) based NLC with Gelucire 44/14 as solid lipid, oleic acid as liquid lipid and Tween 80 as surfactant to investigate its potential use in improving the bioavailability and brain targeting efficiency following non-invasive intranasal administration. QF loaded NLC showed particle size, entrapment efficiency and drug loading in the range of 101.28 to 208.15 nm, 35.84 to 84.95% and 4.94 to 24.49 % respectively. Optimized formulation had shown highest *ex-vivo* nasal diffusion (34.27±0.28) at 6th hour with no sign of structural damage upon histopathological examination, infers that formulated NLC can permeate through nasal mucosa as such into the receptor compartment retaining the drug within their matrix. Significantly higher Brain/Blood ratio was observed in QF loaded NLC administered through nasal route (IN) in comparison to QF loaded NLC administered through Intravenous route (IV) revealed that there is a prolonged retention of QF at site of action. Following nasal administration concentration of QF in brain was found to be significantly higher at all-time points indicating potential nose to brain transport bypassing blood-brain barrier. Overall, the above finding shows promising results in the area of developing non-invasive intranasal route as an alternative to oral route for brain delivery in the management of schizophrenia.

Keywords: Nanostructured lipid carriers, Quetiapine fumarate. Haloperidol, Schizophrenia, Brain targeting, Intra nasal route

DOCTOR'S PERCEPTION ON INTEGRATED MEDICINE

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ABSTRACT

To assess attitude and practice of the modern medicine practitioners towards integration of modern medicine (MM) and traditional medicine (TM) using questionnaire. A cross sectional questionnaire based study was conducted to assess the knowledge, attitude and practice among doctors regarding integrated medicine. 220 out of 250 completed questionnaires were received from various doctors in and around Hassan. Data were analyzed using descriptive statistics. A total of 88% participants responded to the questionnaire, of which 60 were general practitioners and 160 were consultants from various specialties. About 56.5% accessed the information regarding TM and had better knowledge (47%) regarding integrated medicine compared to those who didn't (13%) ($p<0.001$). More than 57% opined that TM was cheap and easily accessible, however, majority of participants believed MM to be more popular (74.5%). The disadvantages reported of TM being minimum training (63.7%), unqualified traditional medicine practitioners (TMPs) (63.7%), inappropriate dose calculation (52.1%), lack of scientific evidence (57%), toxicity (42%) and unreliable diagnostic techniques (74.3%). About 71.5% doctors took history about TM use from their patients and 85.9% doctors treated them. Majority (77%) did not advise any TM. Though 81.6% had never collaborated with TMPs, 55.6% supported integration of TM with MM and believed integrated approach would have positive impact on patients.

Keywords: Allopathic doctors, Perception, Integrated medicine

EVALUATION OF EFFECTS OF COMMIPHORA WIGHTII IN DEHYDROEPIANDROSTERONE (DHEA) INDUCED POLYSTIC OVARY SYNDROME (PCOS) IN RODENTS

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ABSTRACT

Hyperandrogenism and insulin resistance are the main manifestations of polycystic ovary syndrome (PCOS), which appears to be caused by exposure to androgenized models have developed and investigated to study the etiology of polycystic ovary syndrome. To evaluate the modulatory effects of *Commiphora wightii* (*C. wightii*) resins in response to hyperandrogenism in polycystic ovary syndrome. The animals were divided 20 adult (5-6 mo old) wistar rats in to 4 groups the PCOS model was induced by daily administration of dehydroepiandrosterone (DHEA) 6 mg/Kg in sesame oil p. o., up to 15 d and the rescue groups were take daily with metformin and C. wightii resin ethanolic extract 100 mg/kg in addition to DHEA. Serum glucose levels measured and steroid hormone levels were measured by fully automated bidirectionally interfaced chemi luminescent immunoassay. Samples were stained with hematoxylin and eosin for histological morphology. The obtained results related to DHEA induced PCOS a significant ($P<0.05$) increase in hormone profile (estradiol, testosterone, progesterone, luteinizing hormone, follicle stimulated hormone) in PCOS rats in adult rats than the rescue groups. Furthermore glucose levels significantly (<0.05) elevated in PCOS rats compared with the other groups. The test treated ovaries had lower number of follicles compared to DHEA control group and similar to that of the control group than the standard. Commiphora wightii resin has a potential role in reducing DHEA induced PCOS by reducing the morphological abnormalities of the ovarian follicles and normal hormone levels in adult rats.

Keywords: Dehydroepiandrosterone (Dhea), Polycystic ovary syndrome (Pcos), *Commiphora wightii* (*C. Wightii*), Histological morphology

THE EFFICACY OF VITAMIN C ON HEMOGLOBIN LEVELS AND WHITE BLOOD CELL COUNT AS AN ADJUVANT IN THE TREATMENT OF DENGUE FEVER

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ABSTRACT

The objective of this study was to observe any effects of Vitamin C on haemoglobin percentage and white-blood-cell (WBC) count in patients with dengue fever. This prospective comparative observational study took placein general medicine wards of Rajarajeswari Medical College and Hospital from January to December 2017. Total 130 NS1 positive patients with baseline platelet count between 50,000–1,00,000/µl were included and randomly assigned to two groups. Group 1 received oral Vitamin C 500 mg four times daily with standard care of treatment for dengue fever. Group 2 received standard care of treatment only. Haemoglobin levels and WBC counts were taken before treatment and on Day 7. Data was entered in Microsoft Excel and analysed using SPSS software. Non-parametric tests (Wilcoxon-Mann-Whitney U test) were employed and P values<0.05 was considered statistically significant. Total 123 patients were included after 7 patients were dropped due to certain complications. Group 1 had 63 patients and Group 2 had 60 patients. Baseline Haemoglobin levels and WBC counts were not significant between the two groups (p= 0.79, 0.85). After treatment, there was no change in haemoglobin levels in both groups on Day 7. An increase in WBC count was seen in both groups (p =<0.05) on Day 7, however, Group 1 showed a much more significant increase compared to Group 2 (p = 0.000001). Therefore, Vitamin C may be an essential element in the management of Dengue fever.

Keywords: Dengue fever, Haemoglobin levels, White blood cell count, Vitamin C

EMPIRICAL DEVELOPMENT OF ORALLY DISINTEGRATING TABLETS OF MICROSPHERES OF HIGHLY VARIABLE WATER SOLUBLE DRUG BASED ON QUALITY BY DESIGN.

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ABSTRACT

Present study entails quality by design (QbD) based development of orally disintegrating tablet of microspheres of Venlafaxine hydrochloride in order to control variable bioavailability and achieve patient compliance. New generation ODT combines the benefits of both formulations by providing longer period of drug release along with rapid disintegration that is suitable for any person having dysphasia. Hence, a patient centric quality targeted product profile (QTPP) was developed followed by selection of critical quality attributes (CQAs) for the product (microspheres were previously optimised). Risk assessment was performed by putting factors affecting formulation in to and ishikawa diagram followed by generation of risk estimation matrix and failure mode effect analysis (FMEA). All superdisintegrants were evaluated and the one providing minimum disintegration time was selected for further study. Face centered Central composite design was employed using % disintegrant (X1) and Compression Force (X2) as independent variables and batches were prepared using direct compression method using MCC pH101 as cushioning agent to prevent rupture of microspheres while compression. All prepared batches were evaluated for CQAs viz. *In vitro* disintegration time, hardness, friability,% drug release in 15 min(burst release) and T90(Time required to release 90% drug). Mathematical modelling was carried out based on generated design space, n value was found to be 0.75 meaning drug release follows anomalous pathway. Drug-excipient compatibility was studies using FTIR and DSC, which suggested suitability of excipients with drug. *Ex-vivo* permeation studies on goat oesophageal mucosa suggested excellent permeation of drug. *In vivo* studies suggested the prepared formulation has greater bioavailability compared to present marketed formulation (Effexor®) and variable bioavailability was controlled.

Keywords: Variable bioavailability, Qbd, Microspheres, Orally disintegrating tablet

ANTIOXIDANT ACTIVITY OF COMPOUND ISOLATED FROM GYMNEMA SYLVESTRE

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ABSTRACT

Gymnema sylvestre (Asclepiadaceae), a vulnerable species is a slow growing, perennial, medicinal woody climber found in central and peninsular India. *G. sylvestre* has a long history of use in herbal medicine and a broad range of therapeutic properties. *Gymnema sylvestre* leaves contain triterpenoid saponins, flavonols, gurmarin. The major biologically active plant molecules are gymnemic acids, a class of triterpenoid saponins. Phytochemical investigation of leaves of *G. sylvestre* was carried out. Compound G1 was isolated *via* coloumn chromatography and characterized by UV, FTIR, 1H NMR and MS spectroscopy. Antioxidant activity of isolated compound against DPPH radical was determined and compared with standard (Vitamin C).

Keywords: *Gymnema sylvestre*, MS spectroscopy, Antioxidant activity, DPPH

A STUDY ON TREATMENT DEFAULTERS IN TUBERCULOSIS PATIENTS ON DOTS THERAPY

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ABSTRACT

Revised National Tuberculosis Control Programme faces default is an important challenge, which has achieved improved cure rates. Present study was carried out to assess the treatment defaulters among tuberculosis patients receiving DOTS therapy. A prospective observational study was carried out for a period of 8 mo. During the study period all the patients who was administered with dots therapy for the treatment of tuberculosis were included the study. The data were collected from the patients or their care takers to obtain the treatment given earlier before default, number of treatment interruptions and reasons for treatment interruptions. A total of 21 patients interrupted the treatment, of which 12 were defaulters. The overall percentage of the default to the treatment was 13.3%. The case fatality rate was 4.4%. The most common reason for the treatment interruptions were distance to travel for the treatment (58.3%) followed by transportation (25%), lack of family support (50%), Felt well with TB treatment (41.7%), workload (25%) and other reasons. The study revealed that the most of the defaulters were in the age group between 50 to 65 y, male, rural domicile, patients pursuing primary education, pulmonary TB patients. Defaulting can be enhanced by patient education, interviewing them periodically, monitoring the treatment condition and side effects. So the Clinical pharmacists are responsible in promoting the dots therapy to improve the patient's adherence towards it, there by achieving a well treatment outcome.

Keywords: Tuberculosis, DOTS Therapy, Default, ADR Monitoring

DEVELOPMENT AND EVALUATION OF MOLECULARLY IMPRINTED POLYMER FOR THE ENTRAPMENT OF ACEPHATE

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ABSTRACT

Molecularly imprinted polymer (MIP) is a rapidly evolving technique to prepare synthetic receptors, which are capable of specific molecular recognition and drug delivery. This is achieved by polymerization of monomers and template in the presence of a suitable cross linker, in a porogenic environment. After polymerization process, the template is removed from the polymer leaving specific recognition sites complementary in shape, size and chemical functionality to the template molecule. This research aims at development and evaluation of MIP for the organo-phosphorus pesticide, acephate. Various initiator concentrations ranging from 0.5 to 1.5% of Azobisisobutyronitrile (AIBN) had been tried for acephate for formation of polymer complexes. The release and absorption of the template by the respective MIPs was found to be dependent on initiator, monomer and cross linker ratio because of the formation of cavities in the MIPs. After the template release from polymer complex, polymer complex was again kept in solvent for complete removal of template from polymer and MIP was formed. Based on the absorption of acephate by MIP, monomer, crosslinker ratio Methacrylic acid: Ethylene glycol dimethacrylate (MAA: EGDMA) 1:0.66 was selected for further studies. After polymerization, the polymer complexes were washed with suitable solvent for removal of excess amount of template adhered on the polymer complex and was calculated. It can be concluded that, the polymer complex prepared for molecular imprinting of acephate has the ability to rebind the acephate to the binding sites. The release and absorption of acephate from polymer complex was affected by changing the monomer and crosslinker ratio, initiator used in the polymerization process. The formed polymer complexes have specificity for acephate.

Keywords: Molecularly imprinted polymer, Acephate, Monomer, Initiator, Crosslinker, Entrapment, Release

ANTI-HYPERLIPEDIMIC ACTIVITY OF *CARDIOSPERMUM HALICACABUM* LEAF EXTRACT IN HIGH FAT DIET INDUCED HYPERLIPIDEMIA RAT

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ABSTRACT

Hyperlipidemia involves abnormally elevated lipid levels. Its management using statins, fibrates, bile acid sequestrants and niacin lead to various adverse effects. The present study is to evaluate antihyperlipidemicactivity of *Cardiospermum halicacabum* leaf extract in high fat diet induced hyperlipidemia rat. Leaf extract was prepared using soxhlet apparatus and evaluated for acute toxicity and antihyperlipidemicactivity. Adult male albino rats of six numbers in each group were used for the study. Animals were divided into 5 groups, i.e., Normal, Positive control, Low dose (200 mg/kg body weight), High dose (400 mg/kg body weight) and standard. Total Cholesterol (TC), Triglyceride (TG), Highdensity lipoprotein (HDL), Low density lipoprotein (LDL) and Very Low Density Lipoprotein (VLDL) levels were evaluated. The Leaf extract didn't showany toxicity or mortality, hence considered as safe extract. The *Cardiospermum halicacabum* leaf extract treated groups showed significant reduction in serum total cholesterol, triglycerides, low density lipoprotein and very low density lipoprotein-cholesterol and significant increase in High density lipoprotein when compared to that of normal rat. Hence, it is concluded that *Cardiospermum halicacabum* leaf extract exhibits a significant antihyperlypidimic activity

Keywords: *Cardiospermum halicacabum*, Antihyperlipidemic, Triglyceride, High density lipoprotein

INCIDENCE OF ADVERSE DRUG REACTIONS AMONG PATIENTS USING BENZODIAZEPINES IN THE DEPARTMENT OF PSYCHIATRY IN A TERTIARY CARE HOSPITAL, BANGALORE, KARNATAKA

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ABSTRACT

Benzodiazepines (BZDs), an effectively prescribed medicine for insomnia and anxiety was reported to be used beyond recommended time frame, leading to adverse events such as sedation, falls and cognitive impairment. Long term use of BZDs poses significant dependence which negatively impacts patient's Quality of Life (QoL). This is an observational study conducted over a period of 7 mo from August 2017 to February 2018 among the patients visiting the Department of Psychiatry, aged above 18 y using BZDs for more than 4 w. A total of 109 patients were recruited for the study based on the inclusion criteria. The patient data was collected using medical records, direct patient interviews and transcribed into a specially designed data collection form. The ADRs experienced by patients were identified, monitored, documented and reported to the Pharmacovigilance Centre. ADRs were identified by patient's interventions during the follow-up. The study included 10(9.1%) patients using BZDs appropriately followed by 36(33%) short term and 63(57.7%) long term users of BZDs. The commonly prescribed BZDs include clonazepam 91(83.5%), lorazepam 13(11.9%) and alprazolam 1(0.9%). Among the study subjects, 29(26.6%) patients were found to have atleast one ADR and males had more ADRs compared to females. The most commonly observed ADRs include oversedation 16(14.7%), drowsiness 10(9.2%) and dizziness 9(8.3%). Less common ADRs like vision abnormalities 4(3.7%), dependence 3(2.8%) and falls 2(1.8%) were also observed. The current study emphasise that monitoring of patients is required in case of patients consuming both short term and long term use of BZDs which can minimize the incidence of ADRs and improve the QoL of patients.

Keywords: Benzodiazepine, Adverse drug reaction, Quality of life

AMYOTROPHIC LATERAL SCLEROSIS (ALS)

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ABSTRACT

Amyotrophic Lateral Sclerosis (ALS):-it is also known as "Lou Gehrig's Disease," calledrarely as Charcot disease." No muscle nourishment." Is the complete meaning to ALS. As motor neurons degenerate, they can no longer send impulses to the muscle fibers that normally result in muscle movement. ALS is not contagious. Approximately 5-10%of A. L. S is inherited, with responsible mutations identified in nearly 60% the first mutation discovered was the SOD1 gene on chromosome 21 which was used to create a transgenic animal model that has been used to screen new drugs and study disease physiology. Early symptoms of ALS often include increasing muscle weakness, especially involving the arms and legs, speech, swallowing or breathing. When muscles no longer receive the messages from the motor neurons that they require to function, the muscles begin to atrophy (become smaller). Limbs begin to look "thinner" as muscle tissue atrophies. Although the cause of ALS is not completely understood, the recent years have brought a wealth of new scientific understanding regarding the physiology of this disease. It is important to remember that ALS is a quite variable disease; no two people will have the same journey or experiences.

Keywords: ALS, Muscle nourishment, Thinner

FORMULATION AND EVALUATION OF GALLIC ACID AND XYLOGLUCAN BASED HYDROGEL FOR WOUND HEALING APPLICATION

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ABSTRACT

A thermo reversible gel can transmute from a solution to a gel and vice versa, in replication to a vicissitude in environmental temperature. Physical cross-linking strategy has been employed to engender the desired viscoelastic properties for the formulation of temperature-sensitive gels composed of Gallic acid (GA) and tamarind seed xyloglucan (TSX). Gallic acid is used as a cross-linker to avoid the use of any toxic chemical as a cross-linking agent. The prepared gel formulations were evaluated for visual appearance, pH, Gelation temperature, Gravitational flow stimulation, Rheological studies, *in vitro* drug release study. The prepared formulations were much clear and transparent with the pH in the range of 5.5–5.8 to avoid the risk of irritation upon application to the skin. A low temperature induces intermolecular aggregation of TSX between GA and TSX, to form gel network. The formulations showed gelation temperature in range of 34±1.42 to 58±1.7 °C. The thermal stability of the GA–TSX gel incremented with incrementing the GA concentration. The viscoelastic deportment of the GA–TSX amalgamations depended on the concentration of GA. Gel formulations exhibited consequential antibacterial activity against both gram positive and gram negative bacteria. Gel formulations showed paramount wound rejuvenating property as compared to control group with a more expeditious epithelialization and more preponderant rates of wound contraction. The adjustable properties of GA–TSX gels simply by transmuting the concentration of GA would most likely sanction them to be developed into biomaterials.

Keywords: Thermo reversible gel, Physical cross-linking, Viscoelastic deportment, Thermal stability, Epithelialization

LEVONORGESTREL AND NOVEL ADVERSE EVENTS: A DISPROPORTIONALITY ANALYSIS OF FOOD AND DRUG ADMINISTRATION ADVERSE EVENT REPORTING SYSTEM (FAERS) DATABASE

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ABSTRACT

Levonorgestrel is most commonly utilized as emergency oral contraceptive. Little is known and/or studied about the adverse effects of levonorgestrel, therefore, current investigation was aimed to generate signal for unreported adverse drug reactions of levonorgestrel using disproportionality analysis in food and drug administration adverse events reporting system database. In Food and Drug Administration Adverse Events Reporting System (FAERS) database all adverse event reports for levonorgestrel between January 2006 to June 2015 were identified and disproportionality analysis was conducted for selected adverse events of levonorgestrel using reporting odds ratio, proportional reporting ratio and Information component with 95% confidence interval. We performed disproportionality analysis for 15 adverse events of levonorgestrel, out of these we found signal for 10 adverse events, among them menstruation delayed was reported maximum (1791), followed by pregnancy after post coital contraception (942), breast tenderness (901), metrorrhagia (899), dysmenorrhea (822), menorrhagia (541), nipple disorder (141), breast enlargement (77), ectopic pregnancy (61) and premenstrual syndrome (35). Pregnancy after post coital contraception showed the highest signal having the information component value of 129.2, reporting odds ratio value of 6.51 and proportional reporting ratio value of 6.49. Signal generated for adverse event ofa drug by applying disproportionality analysis in USFDA database is significant in early detection of an adverse event. Based on our study we conclude that safety profile of levonorgestrel requires further clinical evaluation. Adherence to dispensing guidelines of oral contraceptives, and categorizing it as prescription drug, can decrease serious adverse events in future.

Keywords: Signal detection, Data mining algorithms, FDA AERS Database, Levonorgestrel, Pharmacovigilance

OPTIMIZATION OF PROCESS VARIABLES USING SURFACE RESPONSE METHODOLOGY ON PRODUCTION OF L-ASPARAGINASE FROM *STREPTOMYCES ALBOGRISEOLUS*

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ABSTRACT

The main purpose of the study was to purify and characterize L-asparaginase from actinomycetes of novel origin. A total of 106 isolates were screened through rapid plate assay method from various soil isolates that were collected from Udupi district, Karnataka. Among the 106 isolates, 17 were found to be active. Furthermore, a promising isolate FMCL-13A with an enzyme activity of 40.253 U/ml waschosen by submerged fermentation technique. Response Surface Methodology (RSM) was employed for optimization of various experimental parameters in order to enhance L-asparaginase production. The nutritional variable which affects the enzyme production by submerged fermentation from the active isolate were first optimized by PB model. Parameters such as L-asparagine, pH, dextrose and KH_2PO_4 were selected for further optimization using RSM. Central Composite Design (CCD) was used for the optimization of selected variables from PB. The experimental value for specific enzyme activity was found to be 57.29 U/ml which was similar to the predicted value of 57.68 U/ml, hence indicated that the model is significant. Among all the variables monitored, pH was found to be the most significant one. Precipitation of enzyme using saturated solution of ammonium sulphate followed by dialysis enhanced the enzyme activity from 53.87 to 78.74 U/ml. The Km and Vmax values of the enzyme were calculated from reciprocal plots of substrate concentration against response velocity. The Km and Vmax from the graph was found to be 0.05 M and 83.33 U/ml/minute. The organism was identified as *Streptomyces albogriseolus* through 16SrRNA sequencing.

Keywords: L-asparaginase, PB model, Central Composite Design, *Streptomyces albogriseolus*

ANTIMICROBIAL POTENTIAL OF HYDROGEL INCORPORATED WITH PLGA NANOPARTICLES OF *CROSSANDRA INFUNDIBULIFORMIS*

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ABSTRACT

In the present study, ethanolic leaf extract of *Crossandra infundibuliformis* (EECI) was nanoencapsulated by deploying a biodegradable poly-(lactic-co-glycolic) acid (PLGA). PLGA nanoparticles containing EECI were synthesized by an emulsion-evaporation method and their physico-chemical properties were studied. Polymeric PLGA nanoparticles were then incorporated into gel matrix, using HPMC K_4M as base. The antibacterial activity of nanoparticulated hydrogel formulations were evaluated by agar well diffusion method against *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli* and *Pseudomonous aeruginosa*. Nanoparticulate hydrogel formulations exhibited high viscosity, neutral pH with good spreadability which is appropriate for transdermal application as well as showed prolonged drug release from optimized formulation up to 24 h. Nanoparticulate hydrogel formulations were effective inhibitors of all the micro-organisms with more promising activity against *Staphylococcus aureus*. Hence Nanoparticulate hydrogel formulation can be used as a feasible alternative to conventional formulations of *Crossandra infundibuliformis* extract with advanced permeation characteristics of antimicrobial constituents for transdermal application.

Keywords: *Crossandra Infundibuliformis,* Nanoparticles, Hydrogel, Antimicrobial activity

EVALUATION OF PRESCRIPTION AUDITING AND PATIENT COUNSELLING ON CKD PATIENTS IN TERTIARY CARE HOSPITAL

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ABSTRACT

The prescriptions are very effective tool in health care sector and it has huge importance in treating affected patients. The physians/medical practioners are having enormous role in generate prescriptions. Many of the patients captivating prescription medicines without proper doctors/pharmacists instruction or follow up, this is because, Difficult to remember the prescription schedule, if consuming multiple medicines, If not observe a symptoms improvement and they think medicines are not working, so that they stop taking medicines. Skipping doses/taking less because the medicines are expensive. The follow up of prescription and prescribed medications are more effective why because before the treatment begins exact instructions given by doctors and pharmacists on when and how to take drugs. So that, the patients has to discuss about usage of the prescribed medications to prevent drug interactions, side effects and symptoms. In this current work, the oxidative stress and Chronic Kidney Disease (CKD) was chosen to perform prescription auditing, patient counselling and drug utilization studies. The performed study reports showed that, the antioxidant therapy how effective in CKD patients. The prescription based patient counselling suggests that, the Nephrologists to prescribe NIACIN and VITAMIN E as a Combination therapy.

Keywords: Prescription, Medicine, Counselling, Chronic kidney disease

SUITABILITY OF SODIUM POLYACRYLATE FOR TOPICAL WOUNDS: FORMULATION, MICROBIOLOGICAL AND PHARMACOLOGICAL STUDY

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ABSTRACT

Normally for regular wound management antiseptic powders for topical application is choice of therapy along with oral antibiotics. Managing superficial wounds is comparatively easier than managing exudating wounds. The aim of present research work was to develop an antiseptic powder specially for exudating wounds which will in addition to antiseptic effect will give absorbent effect. For this purpose Sodium polyacrylate a polymer with super-absorbancy power was used alone or in combination with other hydrophilic polymer PVP K25, PVPK30, PEG 8000, PEG 4000, PVA etc which will help to absorb body fluids that exudates out during surgery,cuts,wounds,burns,ulcers etc. The developed antiseptic absorbent powder formulation was evaluated for flow properties like Hausner's ratio, compressibility index and angle of repose etc. The suitable formulation were subjected to microbiological assay using cylindrical plate method to check the effect of polymer on the efficacy of drug and also were subjected to *in vivo* antimicrobial activity on albino wistar rats. It was found that the successfully achieved wound healing in 5 d with complete remodelling of skin without any allergic reactions to skin. The study thus concludes suitable utilisation of Sodium polyacrylate as a adjunctive excipient for topical powder specially for exudating wounds.

Keywords: Sodium polyacrylate, Super-absorbent, Topical powders, Wound management, Zinc bacitracin, Neomycin sulphate

STEVENS JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS OVERLAP: A CASE REPORT

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ABSTRACT

Stevens–Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN)overlap syndrome is a rare, acute serious and potentially fatal drug induced skin reaction. Although previous studies are available on phenytoin induced SJS or TEN, same patient experiencing both SJS/TEN overlap is scantly reported. In our case, a 35-year-old patient presented with history of maculopapular rashes all over the body and fever for 2 d to emergency department. He was on Tab. Phenytoin 300 mg for one month after hematoma excision. The patient developed rashes all over the body and fever after 3weeks of initiation of therapy. On examination ulcerated erosions, crusting and discharge of both eyelids and conjunctival congestion was present. Dermatological examination revealed multiple target lesions with peeling of skin over face, lips, tongue, ears, eyes, abdomen and back. Lesions were also observed on scrotum and penis along with scrotal swelling. Upon evaluation with SCORTEN, the severity score was found to be 2, with 10-30% BSA involvement on day 1. Patient was diagnosed to have SJS-TEN overlap secondary to phenytoin. Aggressive resuscitative efforts were undertaken for the management of this patient. As this condition has higher incidence of morbidity, health care professionals must be cautious while prescribingthe drugs which has the tendency to cause SJS-TEN overlap.

Keywords: Stevens–johnson syndrome, Toxic epidermal necrolysis, Phenytoin

DEVELOPMENT AND CHARACTERIZATION OF NOVEL FORMULATION FOR SCALP CARE

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ABSTRACT

Dandruff is a common scalp disorder, characterized by presence of corneocytes in the form of flaky white to yellowish scales, accompanied by itching. The aim of this research work was to develop a novel formulation for treatment of dandruff, thereby reducing frequency of application and side effects of the existing conventional marketed formulations. Liposomes and niosomes both are promising carriers for the delivery of Clotrimazole in treatment of dandruff. Liposomal dispersion was found to be unstable and sedimentation was observed at room temperature. Also, liposomes prepared showed lesser entrapment efficiency as compared to niosomes therefore they were found unsuitable for the further study. Clotrimazole was loaded in concentrations of 0.025 and 0.05% w/v in niosomes. 3^2factorial design used with variables being the Surfactant: Edge activator ratio and Surfactant: Cholesterol ratio. Optimized niosomal dispersion was characterized for vesicle size, size distribution, Zeta potential, TEM and DSC. Optimized drug loaded niosomal dispersion was incorporated in carbopol 980 at concentrations 1%, 1.5% and 2%. Vesicle size of drug loaded niosomes NF3 was found to be 0.56µm, Zeta size of the same batch was found to be 512 nm with 0.363 polydispersity index. *In vitro* diffusionprofiles of optimized batch showed release of 58.33% at 8^{th} hour. Niosomal gel NF3 showed higher skin retention as compared to marketed gel. Hence, clotrimazole niosomal gel could be a suitable option for treating Dandruff due to its retention property. Niosomal gel when compared with marketed formulation (Candid gel) showed better anti-fungal activity against *Malassezia furfur* which is considered to be the leading cause of microbial dandruff.

Keywords: Dandruff, Clotrimazole, Niosomes

KNOWLEDGE OF ANTI-DIABETIC DRUGS AMONG THE NURSING STUDENTS OF INSTITUTE OF NURSING IN GOA

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ABSTRACT

Diabetes is increasing in India at an alarming rate. Health care professional educators need to have evidence based practice and update knowledge and skills for its effective management. The students lack complete knowledge regarding pharmacology. This can have adverse impact on the quality of patient care. The students have learning responsibility and exposure to clinical practice during the course which could make their practice better. The aim of the study is to identify any gaps in the current curriculum for the nursing course and the knowledge gained by the nursing students. Exploratory survey design was used for the data collection. The study participants were nursing students of third and fourth year. The data was collected by using self-administered questionnaire regarding 3 common drugs used by the diabetes patients. A convenient sample of 190 students is enrolled with universal sampling technique. The epi-data manager will be used for data entry and SPSS for analysis. As students complete pharmacology subject in the second year and will be experiencing diabetes patients in clinical practice, they may have less knowledge specific to the drugs such as metformin, glimepiride and insulin. There may be difference in the knowledge among the third year and fourth year students. The students need to understand important practical aspect to advise their patients. The curriculum needs improvement, teaching method to be simple and specific so as to make it easy and applicable for practice. Final results and conclusions will be discussed after the final analysis of the data.

Keywords: Glimepiride, Insulin, Knowledge, Metformin, Nursing students

DEVELOPMENT OF 2D AND 3D QSAR MODELS OF ARYL THIAZOLE DERIVATIVES FOR ANTIBACTERIAL ACTIVITY

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ABSTRACT

Development of new anti-bacterial agents using 2D/3D QSAR analysis. The 3D QSAR study was performed using k-nearest neighbour molecular field analysis (kNN-MFA) approach for electrostatic, steric and hydrophobic fields. The 2D QSAR analysis was performed with MLR technique. A series of 20 molecules of Aryl Thiazole derivatives reported in literature Khan M S *et al.* (2009) were used for development of 2D and 3D QSAR models. The data set of 20 molecules were divided into training and test set in the ratio of 70:30, The biological activity was converted to logarithmic scale (pIC_{50}) in mathematical operation mode of the software. The statistically significant 2D-QSAR models for G+(*Staphylococcus epidermatitis*) inhibition activity are r^2 =0.9521 and q^2 = 0.8619 and 3D QSAR results for internal (q^2 = 0.8283,) and external (predictive r^2 = 0.4868,) validation criteria. Thus, 3D QSAR models showed that electrostatic effects dominantly determine the binding affinities. 2D QSAR studies revealed that T_C_C_4 descriptors were major contributing descriptor in case of G+inhibition activity. In the present investigation, all proposed QSAR models were statistically significant. The requirements for the more potent biological activity are explored with 2D, 3D and group based QSAR studies. The 2D technique indicates the importance of T_C_C_4, K1alpha, SsOHCount, T_N_S_2, T_O_O_6, T_T_N_7, T_N_O_6, H-donor Count, chi4chain, T_C_F_4 G+inhibition activity of the compounds. The 3D QSAR analysis makes it possible to relate chemical structures of ligands and their binding affinity with respect to different bio targets by using the kNN-MFA techniques.

Keywords: Aryl thiazole, QSAR, KNN-MFA, GRIP

ISOLATION AND CHARACTERIZATION OF COGNITIVE ENHANCING BIOACTIVE MOLECULE FROM INDIAN MEDICINAL PLANT

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ABSTRACT

Cognitive enhancement, the amplification or extension of core capacities of the mind, has become a major topic in bioethics. Herbal medicine is a major component of all traditional medicine. To ascertains the cognition potential (memory enhancing effects) of the leaves of *Sphaeranthus indicus Linn*. (Astraceae) and *Abrus precatorius* (Facaceae) using Scopolamine induce amnesia and Cook,s Pole climbing apparatus. Alcoholic extracts of *Sphaeranthus indicus* and *Abrus precatorius* leaves on dose 100 200 and300 mg/kg each were administration in adult Swiss albino mice and Wistar rat and the effect on acquisition, retention and retrieval was determine. The higher doses of both the extracts exhibited a more promising cognitive potential. Maximal response was observed in the 300 mg/kg dose of *Sphaeranthus indicus* methanolic extract, which closely approximated the results for the standard drug piracetam. The methanolic extracts of *Sphaeranthus indicus* afforded more cognitive enhancer in comparison to *Abrus precatorius* ethanolic extract, the higher dose evoking pronounced alteration behavior and better learning assessments.

Keywords: *Sphaeranthus indicus, Abrus precatorius* and cognitive enhancer

EVALUATION OF ANTI-CANCER POTENTIAL OF *EULOPHIA NUDA* USING DIFFERENT CANCER CELL LINES

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ABSTRACT

The global burden of the life-threatening disease cancer is increasingwith alarming rates. It has become one of the leading cause of deaths worldwide. The currently available therapies for cancer are associated with severe side effects. The current trend in the cancer research is focused towards finding the safe and effective therapy. The use of plants as a source of medicine has been an ancient practice and is an important component of the health care system providing a rich resource for natural drug research and development. *Eulophia nuda* is one such terrestrial orchid which has been traditionally used for the treatment of various tumours. In the present study, the alcoholic, hydro alcoholic and aqueous extracts of *E. nuda* tubers were studied *in vitro* for their cytotoxic activity using MTT assay on different cancer cell lines. The MTT assay was performed on five cancer cell lines, MCF7, HepG2, A549, Caco-2 and MG-63. The MTT assay was also performed on the non-cancerous Vero cell line. The results suggested that among all the extracts, the alcoholic extract of *E. nuda* showed thesignificant cytotoxicity against all the cancer cell lines, whereas none of the extracts of *E. nuda*showed cytotoxicity on the Vero cells, and hence it could be considered safe to the normal cells. The results supported the use of *E. nuda* tubers in cancer. Further *in vitro* and *in vivo* studies are necessary to explore the anti-cancer potential of *E. nuda.*

Keywords: *Eulophia nuda*, Cancer, Cell lines, Cytotoxicity, MTT assay

DEVELOPMENT AND CHARACTERIZATION OF ANTIPSYCHOTIC ACTIVITY OF ARIPIPRAZOLE TABLETS FORMULATION

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ABSTRACT

The objective of present study was to design and develop a stable soliddispersible oral dosage form of aripiprazole fast dissolving tablets to deliver with optimum concentration of drug at desired site at specific time. Development of various formulations and preparation of oral dispersible tablets by direct compression technique and wet granulation technique. The powder blend was evaluated for various pre-compression parameters like bulk density, tapped density, compressibility index, Hausner ratio and angle of repose. Aripiprazole tablets were evaluated for post-compression parameters. The thickness of the tablets was found in the range 3.0–3.4 mm, the disintegration time 7–14 sec. The percentage drug release at the end of 45 min was found in the range 80–100 %, formulation F6 showed the same released pattern as such of innovator product.

Keywords: Aripiprazole, Oral dispersible tablets, Granulation

BIOSYNTHESIS OF CARDIAC GLYCOSIDES IN PLANTLETS DEVELOPED THROUGH ZYGOTIC EMBRYO CULTURE OF *NERIUM OLEANDER* L.

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ABSTRACT

Nerium oleander or kaner, is an evergreen shrub belonging to the family Apocynaceae, widely used in ornamental or roadside plantation. The plant is well known for diversified cardiac glycosides (CGs) such as oleandrin, digitoxigenin,odorosides, kanerosides,neritalosides etc. These CGs are known for potent cardiotonic, anti-proliferative, anti-diabetic, CNS depressant and anti-inflammatory activities. However, restricted accumulation of such CGs in wild plant make itdifficult to isolatethem in required quantities. Therefore, establishment of analternative source for these bioactive CGs is a prerequisite for their constant and bulk production. Here, we have standardized the protocols for the biosynthesis of CGs from the plantlets developed through zygotic embryo culture. The zygotic embryos from the immature pods were isolated and cultured on MS (Murashigeand Skoog), WPM (Woody PlantMedium), B5 and SHM (Schenk and Hildebrandt Medium) mediaalong with variation in media strength and sucrose content. ¼ strength of MS medium containing 15 gm/l sucrose showed 96.66±3.33 % embryo germination within three days whereas mature seed germination on the same media was only 38.44±3.63% up to 10 d. One-month old *in vitro* seedlings were analyzed through LC-MS and revealed presence of 9 CGs, of which 3 were identified and characterized as oleandrin (MW576.329), odoroside-A (MW518.324) andodoroside-H (MW534.319). Among these,odoroside A and odoroside H were biosynthesized in enhanced amount than wild. This workon CGs biosynthesis through *in vitro* raised plantlets from zygotic embryo is veryuseful particularly to overcome seed dormancy of *N. oleander*.

Keywords: *Nerium oleander*, Cardiac glycoside, Odoroside A, Odoroside H, Zygotic embryo culture

ASSESSMENT OF KNOWLEDGE REGARDING THE USE OF ANTIMICROBIALS AND ANTIMICROBIAL RESISTANCE AMONGST PHARMACY STUDENTS IN ANDHRA PRADESH AND KARNATAKA

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ABSTRACT

Antibiotics are considered as the mainstay of treatment to combat against all infectious diseases. Inappropriate use of antibiotics has led to an emergence of antibiotic resistant micro-organisms. The current study aims at assessing the knowledge regarding the use of antimicrobials and antimicrobial resistance amongst the pharmacy students which was conducted for a period of 6 mo. A total of 900 pharmacy students aging between 19-23 y were included in the study of which females were 483 (54%) and males were 417 (46%). Majority of the respondents (n=656, 72%) stated that antibiotics are used for bacterial infections alone but not for viral infections. Amongst the respondents, 56% (n=501) were aware that broad spectrum antibiotics were better than the narrow spectrum antibiotics. Only 30% (n=272) of respondents had a misconception that higher doses result in faster recovery. When the respondents were asked if IV antibiotics are better than oral, most of them (n=515, 57%) condemned it. Higher percentage of the respondents (n=152, 17%) opined that drug resistance is one of the common adverse reaction of antibiotics. Most of the respondents (n=362, 40%) were aware about the food animals. Higher percentage of respondents (n=646, 72%) were aware about how antibiotic use in food animals is linked to resistant infectious diseases in humans. In general, relatively high percentage of participants (58%) was aware about the existence of antimicrobial resistance. Educating the pharmacy students on antimicrobial resistance may facilitate the future clinical pharmacists to counsel the patients on appropriate consumption of antibiotics.

Keywords: Knowledge, Antibiotic resistance, Food animals, Infectious diseases

SYNTHESIS AND BIOLOGICAL EVALUATION OF SOME NOVEL DERIVATIVES OF BENZYLIDENE

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ABSTRACT

Now a day's treating infectious diseases has became a complicated because micro organisms are developing resistance towards synthetic and chemical agents. To overcome this problem, we can use natural drugs. But natural be converted into semi synthetic antimicrobials by using some chemical reactions, after studying their S. A. R to increase the activity which produces derivatives which are better than others synthetic agents. Benzylidene derivatives having anti-microbial activity. So, our aim is to synthesize some semi synthetic derivatives and biological activity to evaluate that novel for their potency.

Keywords: Micro organisms, Drug resistance, Natural drugs

STEM CELL THERAPY IN CANCER TREATMENT

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ABSTRACT

Stem cells have inherent tumouritropic migratory property and can be effectively used for delivering targeted treatment to metastatic diseases and isolated tumours. The review work tells about the self-renewal of the stem cells which are controlled by signals and the manner in which the cells are hijacked in cancer. It describes about the various applications of stem cells in cancer stem cell targeted therapy, immunotherapy and regenerative medicine. The recurrent property of cancer following treatment is very common. It is generally not possible to eradicate metastatic cancer cells by surgical methods or radiochemotherapeutic approach. In order to create tumour seeking therapeutic vehicles, stem cells can be modified, *in vitro*, by inserting specific transgenes which possess antitumour activity. Mesenchymal stem cells (MSCs) have been incorporated in various pre clinical models. MSCs have the ability to be used as potential carriers for anticancer gene delivery. Stem cells used to express various cytotoxic agents decrease tumour volumes and enhance the life period in preclinical animal models. They have also been employed as virus and nanoparticle carriers to enhance therapeutic efficacies and to obtain relief from the side effects of treatment. Presently, research is being conducted to understand the mechanisms that cause therapy resistance after drug delivery, as well as developing *in vivo* imaging approaches to interpret normal stem cell behavior and interactions within living animals, and to define how these change during the development of cancer. The article concludes with the merits and demerits of various approaches towards mitigating cancer by stem cell therapy, the opportunities and shortcomings, attempting to improve the future trials and facilitate transition from experimental to clinical studies.

Keywords: Stem cells, Immunotherapy, Transgene, Mesenchymal stem cells (MSCS)

COMPARATIVE STUDY OF TWO MARKETED HERBAL FORMULATIONS FOR ANTI-ANXIETY EFFECT

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ABSTRACT

The present study aimed at comparing two different brands of herbal preparation used for treating brain disorders. AAF-1 and AAF-2, along with *Lavandula stoechas*, being the individual component of AAF-2, for anti-anxiety, Elevatedplus maze, Light and dark model and Novelty suppressed feed test were used for testing anti-anxiety activity. Additionally, the Restraint stress model was used to confirm anti-anxiety activity. Aqueous extract of *Lavandula stoechas* (AELS) (5 mg/kg), AAF-1 (50 mg/kg) and AAF-2 (50 mg/kg) body weight was administered to the rats by oral route for a period of seven days. The control used was distilled water. Diazepam (2 mg/kg) was usedas standard drug for both the activities. The results were statistically analyzed using one way ANOVA followed by Dunnett's test. It was observed that all the test groups possessed significant anti-anxiety activity, however, AAF-1 at the dose of 50 mg/kg, showed better anti-anxiety activity than AAF-2 in all anti-anxiety models. Hence from the results it can be concluded that, AAF-1 at a dose of 50 mg/kg showed highest and most significant anti-anxiety activity as compared to AAF-2 when administered at the same dose.

Keywords: *Lavandula stoechas*, Anti-anxiety formulation-1 (AAF-1), Anti-anxiety formulation-2 (AAF-2), Elevated plus maze (EPM), Restraint stress, Anti-anxiety activity

MEDICINAL PLANTS HOLD THE KEY FOR ALLEVIATION OF METABOLIC SYNDROME: A VIEWPOINT

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ABSTRACT

Metabolic syndrome is a group of disorders including central obesity, hypertension, dyslipidaemia, hyperglycaemia and insulin resistance which cumulatively enhance the risk of heart disease, stroke and type 2 diabetes. Many theories and pathways have been implicated in the pathogenesis of this syndrome*via*AMP-Activated Protein Kinase (AMPK) Pathway, MAPK (Mitogen Activated Protein Kinase) pathway, PI3K (Phosphoinositide 3-Kinase) pathway, Glucose uptake and glycogen synthesis, Fatty acid oxidation and so on. Medicinal plants are a storehouse of complex phytochemicals that are capable of affecting multiple pathways and targets. Medicinal plants like *Gymnema sylvestre (*Meshashringi, Gurmar), *Momordica charantia (bitter melon, bitter gourd*, *karela and balsam pear), Lycium barbarum (Murali in India, matrimony vine)*, *Berberis vulgaris Linn. (*Barberries*), Cinnamomum zeylanicum (*Cinnamon*), Vitis vinifera* (grape vine)*, Zingiber officinale* (Adrakafresh), *Vaccinium angustifolium* (lowbush blueberry), *Frigonella foenum* (Fenugreek) and *Aegle marmelos* (Bael) the key to the management of metabolic syndrome rather than single molecules. These plants are being vigorously investigated, elsewhere and are reviewed here.

Keywords: Metabolic syndrome, Medicinal plants, Insulin resistance, Central obesity

PROTECTIVE EFFECT OF *BAMBUSA ARUNDINACEAE* AGAINST ACETAMINOPHEN-INDUCED HEPATOTOXICITY IN RATS

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ABSTRACT

Bambusa arundinaceae L., belongs to the family Poaceae was used in traditional medicine for the treatment of many ailments like jaundice, leprosy, skin diseases, cardiac disease, diuretic etc. This research was focused on the exploration of hepatoprotective potential of *Bambusa arundinaceae* L., against acetaminophen-induced hepatotoxicity in male *wistar* rats. The hydroalcoholic extract of *Bambusa arundinaceae* L seeds 100 mg/kg and 200 mg/kg and silymarin (standard) 100 mg/kg were administered orally for 7 d in male *wistar* rats. Hepatotoxicity was induced on 7th day by a single oral administration of acetaminophen 2g/kg orally. After 24 h animals were sacrificed, serum and liver marker enzymes like aspartate transaminase (AST), alanine transaminase (ALT), alkaline and acid phosphatase, bilirubin, total protein, malondialdehyde (MDA), lipid hydroperoxides (LH), super oxide dismutase (SOD), catalase, glutathione peroxidase and reduced glutathione (GSSH) were determined. It was revealed that animals pre-treated with *Bambusa arundinacea* 100 mg/kg and 200 mg/kg showed significant ($P<0.01$) reduction in the elevated level of serum marker enzymes, total bilirubin levels, malondialdehyde, lipid hydroperoxides and significant ($P<0.01$) rise in tissue total protein, enzymatic antioxidants and the non-enzymatic antioxidants level compared to the control group. Histopathological evidence confirmed the protection offered by *Bambusa arundinacea* from the tissue damage caused by acetaminophen. This study concludes that the extracts of *Bambusa arundinacea* possess multimechanistic hepatoprotective activity that can be attributed to its antioxidant, anti-inflammatory, and antiapoptotic actions.

Keywords: *Bambusa arundinacea*, Hepatoprotective, Acetaminophen, Antioxidant

PHARMACOEPIDEMOLOGICAL STUDY ON HEMIPLEGIA IN TERTIARY CARE HOSPITAL

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ABSTRACT

To determine the prevalence of hemiplegic condition in tertiary care hospital, to determine the prescribing pattern for those hemiplegic. Prospective, observational, non-interventional, uncontrolled, unicentric, pharmacoepidomiologic study was conducted at neurology department of a multi specialty hospital informed consent and ethical clearance was obtained from hospital authorities. The patient admission form and discharge summary were the main source of data collection. Prescribing pattern of drug for the inpatients other then the medication history and patient history were observed and recorded. From the above the study it can be concluded that among the observed neurological cases cerebrovascular attacks, abscess, hematoma and TIAs are the most common neurological problems. Effective management of hypertension, diabetes, alcohol and smoking free life style and rational use of antibiotics and antacids are our recommendations from this Pharmacoepidemiological study. The present study emphasizes the need for the role of clinical pharmacist in a hospital to promote health research and public health especially through rational use of drugs.

Keywords: Pharmacoepidemiology, Rational use of drugs, Prescribing pattern, Hemiplegia

FABRICATION AND EVALUATION OF SOLID LIPID NANOPARTICLES OF ANTIEPILEPTIC DRUG–PHENYTOIN

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ABSTRACT

The aim of the study is to prepare Solid-Lipid Nanoparticles (SLN) for sustained delivery of Phenytoin. Phenytoin is commonly used to control tonic-clonic seizures and partial seizures in epileptic patients though it also shows some wound healing activity. It is also used for treating heart arrhythmias in certain cases. SLN were prepared using hot homogenization and sonication method using Cetyl palmitate, Stearic acid and Palmitic acid (0.6% w/v) as lipids, PVA and Pluronic f-68 (1%w/v) as surfactants and soya lecithin as co-surfactant. The formulation was optimized by varying the concentration of soya lecithin, the lipid and the parameters for homogenization and ultrasonication. A concentration of 1% w/v for PVA and a concentration of 0.024% w/v of soya lecithin along with the Palmitic acid (0.6% w/v) was found to be optimizing the SLN formulation. The average particle size of the SLN for the optimized formulation was found to be 200 nm. Loading efficiency was calculated using UV-Spectrophotometry method and was found to be 55.8%. The drug entrapment for the optimized formulation was found to be 53.529%. The stability of the formulation was studied at room temperature (25°C) and at 4°C. The formulation was found to be stable. *In vitro* release study was conducted for a period of 48 h. SLN morphology was observed by SEM and TEM images. The optimized formulation was evaluated on the basis of particle size, loading and entrapment efficiency, release profile, and particle morphology.

Keywords: Solid-lipid nanoparticles, Phenytoin, Palmitic acid

A STUDY ON DRUG UTILISATION EVALUATION OF CEPHALOSPORINS IN GENERAL MEDICINE WARD OF A TERTIARY CARE HOSPITAL

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ABSTRACT

The aim of the study is drug utilisation evaluation of cephalosporins in general medicine ward of a tertiary care hospital. A prospective observational study was conducted among 100 patients who received chephalosporins during the time period of September 2017-April 2018 who were admitted in the hospital. There were 61% male patients and female patients were 39%. The majority of patients (25%) belong to age group 50-59 y. 17 (17%) patients admitted to the general medicine department due to urinary tract infections followed by acute febrile illness 15% and Lower respiratory tract diseases 13%. The duration of treatmentwas found to be 4-6 d in 48% patients. The route of administration of cephalosporins was intravenous in 91% patients. Onlybrand drugs (100%) were prescribed in this study. Ceftriaxone (89%) was the most commonly prescribed drug followed by Cefixime (7%). Most of the patients received 1 gm cephalosporins (85%) followed by 200 mg (8%). 4 different brands of ceftriaxone (1 gm) were prescribed with a price variability of 4.66% and 3 different brands of cefixime were prescribed with a price variability of 29.67% between the cheapest and the most expensive brand prescribed. It was observed that physicians prescribed cephalosporins rationally with no newer or banned drugs but showed evident price variation, which explains the need to produce uniformity in price. The study provides an insight to the pharmacists and other health care professionals on the need to work together for promoting the rational use of antibiotics and to minimize the cost of therapy.

Keywords: Cephalosporins, Drug utilisation, Price variation

FORMULATION AND OPTIMIZATION OF FAST DISINTEGRATING TABLETS USING READY-TO-USE EXCIPIENTS

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ABSTRACT

Fast disintegrating tablets (FDTs) are current development to present such a dosage form, for those patients who have difficulty in swallowing. FDTs are the products that disintegrate rapidly in the saliva without the need of drinking water. So, the present work was aimed in formulation of fast disintegrating tablets of glipizide by direct compression. A 2^3 factorial design was applied to investigate the effect of two ready-to-use superdisintegrant excipients–Ludiflash and Kollidon-CL on hardness, friability, wetting time, *in vitro* disintegration time, drug release and stability parameters. All the formulations, had disintegration time, based on the concentration of superdisintegrants used. However, at higher concentrations of Ludiflash and Kollidon-CL i.e. about 2 to 5 % of either of them drastically decreased the disintegration time. The hardness of tablets varied between 1.6±1.4 to 3.0±0.12 kg/cm^2. The percentage friability was found from 0.56±0.20 to 0.95±0.11%. The percent drug release was in the range 91.80±.015 to 97.38±0.25. All the physical parameters of the compressed tablets were within control. Stability studies were carried out at 25°C/60% RH and 40°C/75% RH for optimized formulation for 3 mo. Stability studies on the optimized formulation indicated that there was no significant change in physical appearance, disintegration time and drug release of the tablets. So, the study showed the potential of experimental design to understand the superdisintegrants and their appropriate concentration that can be utilized for formulation of fast disintegrating tablets. Thus, Fast dissintegrating tablets of glipizide, was successfully formulated.

Keywords: 2^3 Factorial design, Fast disintegrating tablets, Ludiflash®, Kollidon-Cl, Direct compression

FORMULATION AND DEVELOPMENT OF COMBINATIONAL NOVEL TOPICAL DRUG DELIVERY SYSTEM FOR THE MANAGEMENT OF RHEUMATOID ARTHRITIS

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ABSTRACT

Microemulsions are one such carrier systems which increase the solubility of drugs, thus enhancing the dermal penetration and its efficacy. Curcumin Microemulsion formulations were developed with the aim to increase the efficacy, enhance the permeation, to increase the drug solubilisation capacity and to minimize oral formulation constraints. Pharmaceutically acceptable, non-irritating, excipients were selected for this. Solubility of Curcumin and Glucosamine Sulphate Sodium Chloride was determined in various solvents. The concentration of Oil phase: Surfactant and distilled water was optimized by pseudo ternary phase diagram and further processed for the formulation of curcumin microemulsion and microemulsion based gel. The droplet size and zeta potential was determined by Malvern Zetasizer respectively. Suitability and nature of gel formulation was studied with parameters like Spreadability, Viscosity and pH. Permeation rate of curcumin and glucosamine sulphate sodium chloride was performed through porcine ear skin and release profile was evaluated by Franz diffusion cell apparatus which confirmed that drug can easily permeate through the skin due to the optimum particle size of microemulsion, nature of excipients used in the formulation and mechanism of microemulsion. *In vivo* studies of the developed formulation was done by Adjuvant Induced Arthritis Method in male wistar Rats, which indicated that the effect of both the drug included in the formulation was enhanced by prepared microemulsion based gel. The results indicate the utility of both microemulsion and microemulsion gel system as vehicles for topical drug delivery of Curcumin and Glucosamine Sulphate Sodium Chloride along with Castor Oil as a lubricant.

Keywords: Curcumin, Glucosamine sulphate sodium chloride, Microemulsion, Microemulsion gel, Topical delivery, *In vitro* diffusion, *In vivo* diffusion, Control permeation, Male wistar rats, Adjuvant induced arthritis activity

PREVALANCE OF ADVERSE DRUG REACTIONS AMONG HOSPITALIZED GERIATRIC PATIENTS IN THE DEPARTMENT OF MEDICAL ONCOLOGY: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

The aim of the study was to detect, report, assess and document the ADRs associated with chemotherapy in geriatric patients. A hospital based prospective observational study was carried out among 153 inpatients in the department of medical oncology for a period of 6months. The potential risk factors for ADR were defined in relation to patient and chemotherapeutic regimen. The relationship between those risk factors and ADRs was assessed by univariate and multi variate logistic-regression analysis. A total of 136 ADRs were observed in 94 patients, the mean age of the study population was 64.75±4.97 yamong which females accounted for majority of the ADRs (60.64%). The organ systems mostly affected were found to be Gastrointestinal system (44.85%) (OR=1.358; 95% CI 0.69-2.64 p<0.001) followed by dermatologicals (30.15%) (OR=1.50; 95% CI 0.63-3.56 p<0.001) and immune system (17.65%) (OR=2.27; 95% CI 0.9-5.7 p<0.001). The most commonly reported ADR was found to be alopecia (30.15%) followed by diarrhoea (28.68%), vomiting (14.8%), neutropenia (7.35%), myelosupression (3.68%) and nephrotoxicity (2.94%). Cyclophosphamide (OR= 2.98 95%CI 1.26-7.07 p<0.001), Carboplatin (OR=13.359; 95%CI 3.056-58.406 p<0.001)5 Fluoro Uracil (OR= 1.938 95%CI 1.266-2.935 p<0.001) and Adriamycin (OR=16.45; 95% CI 2.41-112.22 p<0.001) were found to be the most significant drugs causing ADRs. Assessment of causality by WHO causality assessment scale indicated that 97% of the reactions were 'probable' and 1% was 'possible'. Implementation of preventive measures will lead to reduction in the severity of ADRs and thereby reduce the economic burden to the patient and helps to improve the treatment outcome.

Keywords: Adverse drug reactions, Geriatrics, Chemotherapy, Causality assessment

PANTOPRAZOLE AND NOVEL ADVERSE EVENTS: A DISPROPORTIONALITY ANALYSIS OF FOOD AND DRUG ADMINISTRATION ADVERSE EVENT REPORTING SYSTEM (FAERS) DATABASE

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ABSTRACT

The study designed to detect novel Adverse Events (AEs) of pantoprazole by disproportionality analysis in FDA database of Adverse Event Reporting System (FAERS) using Data Mining Algorithms (DMAs). The FAERS database used in this study includes 1,39,49,176 Drug Event Combinations (DECs)which were reported from 2006 first quarter (Q1) to 2017 fourth quarter (Q4). Wherein, 2,06,998 DECs were associated with pantoprazole. We considered a DEC for disproportionality analysis only if a minimum of fifty reports are present in database for the given AEs. This resulted in 88 DECs by omitting 2,144 DECs as those had below fifty reports for pantoprazole. The pantoprazole associated AEs which were listed in product label and drug monograph were excluded from the studyleading to 36 DECs. Most frequently used three DMAs, namely, Reporting Odds Ratio (ROR), Proportional Reporting Ratio (PRR) and Information Component (IC) were applied retrospectively from 2006 (Q1) to 2017 (Q4) in FAERS Database. A value of ROR-1.96SE>1, PRR≥2, IC -2SD>0 were considered as the threshold for positive signal. The data mining algorithms exhibited positive signal for dyspepsia (ROR-1.96SE=0.28, PRR=1.47,IC-2SD=0.08), hypocalcemia (ROR-1.96SE=1.59, PRR=5.56,IC-2SD=1.23) and hyponatremia (ROR-1.96SE=0.37, PRR=1.65,IC-2SD=0.06)upon analysis as those were well above the pre-set threshold. Pantoprazole associated three potential signals were generated by data mining in the FDA AERS database. The result requires an integration of further clinical surveillance for the quantification and validation of possible risks for the AEs reported of pantoprazole.

Keywords: Signal detection, Data mining algorithms, FDA AERS Database, Pantoprazole, Pharmacovigilance

HEPATOPROTECTIVE ACTIVITY OF ENDOPHYTIC FUNGAL FRACTIONS OF *PHYLLANTHUS AMARUS* SCHUM AND THONN LEAVES AGAINST CARBON TETRACHLORIDE INTOXICATION IN RATS

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ABSTRACT

Endophytes are microorganisms (bacteria or fungi or actinomycetes) that dwell within robust plant tissues by having a symbiotic association. They are the important source of novel or same secondary metabolites secreted by plants, with interesting biological/pharmacological activities. In this study, an attempt was made to isolate, characterize endophytic fungi from leaves of *Phyllanthus amarus* and to screen the fungal fractions for *in vitro* antioxidant and hepatoprotective activity. Two fungal endophytes (PALF-1 and PALF-2) from *Phyllanthus amarus* were isolated and fermented to get chloroform (P1C, P2C), ethyl acetate (P1EA, P2EA) and n butanol (P1nB, P2nB) extracts. All the endophytic fractions of PALF-1 and PALF-2 were assayed for free radical scavenging properties against 2, 2-diphenyl-1-picrylhydrazyl (DPPH), hydroxyl radical and reducing power. Fractions of PALF-1 and PALF-2 showed good scavenging activity. Further, P1EA, P1nB and P2EA, P2nB were evaluated for hepatoprotective activity against CCl_4, induced hepatotoxicity. P1EA, P1nB, P2EA and P2nB at doses of 50 mg/kg and100 mg/kg, reversed the elevated biochemical parameters as compared to CCl_4 treated group ($^{***}p<0.001$). The LPO, SOD and CAT levels were also restored by P1EA, P1nB, P2EA and P2nB ($^{***}p<0.001$). PALF-1 and PALF-2 were studied for rDNA sequencing by PCR technique. The endophytic fungi, PALF-1 and PALF-2 were identified as *Aspergillus niger strain A6,* and *Macrophomina phaseolina* strain LVPEI. H4198_10 respectively based on their morphology and molecular characterization. The presence of polyvalent secondary metabolites in P1EA, P1nB, P2EA and P2nB were confirmed by HPTLC analysis.

Keywords: Endophytic fungi, Hepatoprotective, Antioxidant, *Phyllanthus amarus, Aspergillus niger* strain A6*, Macrophomina phaseolina*

ISOLATION AND CHARACTERIZATION OF CIRCULATING MICROPARTICLES BY FLOW CYTOMETRY

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ABSTRACT

Microparticles (MPs)are described as a heterogeneous population of membrane-delimitated vesicles 50–1000 nm in size released from the cells in and they have specific markers of cells of origin. The important limitations in the research include collection, storage, and characterization. The objective of the project was to study the isolation and characterization of microparticles. MPs were identified by size and labelling of annexin v and different fluorochromesStaining with Annexin V is necessary at this point to distinguish true events from cell debris or precipitates, as methods for isolating and characterizing MPs. We determined the number of microparticles derived from various immune cells during early apoptosis in healthy volunteers (n=5), which are isolated from plasma samples by ultracentrifugation technique and identified by flow cytometry. It is anticipated better understanding of the mechanisms of MPs formation, their association in different pathogenic conditions. The MPs production is thought to reflect a balance between cell stimulation, proliferation and death. We found that level of neutrophils derived MPs and Th (T helper cells) cells derived MPs are greater than monocytes and Tc (cytotoxic T cells) cells derived MPs. Comparing the level of specific immune cell derived MPs and percentage of immune cells in healthy volunteer, we found that level of neutrophils derived MPs high as well also found even the percentage of neutrophils in healthy volunteers were higher. Whereas, Th cells derived MPs were showing inverse correlation with percentage of Th cells.

Keywords: Microparticles, Annexin V, Flow cytometer, Immune cells, Ultra centrifugation

EVALUATION OF *OCIUMTENUIFLORUM*AND *SYZYGIUMAROMATICUM*PHENOLIC ETHEREAL OILS *IN VITRO* ANTI-INFLAMMATORY AND ANTI-BACTERIAL ACTIVITIES

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ABSTRACT

The present study was aimed to evaluate*In vitro* Anti-inflammatory and Anti-bacterial activity of phenolic ethereal oils like Clove (*Syzygium aromaticum)* and Tulsi *(Ocium tenuiflorum)*. The phenolic ethereal oils were isolated by Clevenger's apparatus,The isolated ethereal oils were used forevaluation of*in vitro* anti-inflammatory activity using egg albumin method at a concentration of (20,40,60, 80 and 100 µg/ml) and Anti-bacterial activity against two gram positive microorganisms (*Bacillus cereus* and *Staphylococcus aureus*) and two gram negative microorganisms (*Salmonella typhi* and *Escherichia coli*) at concentrations 50 µl/ml, 100 µl/ml and 200 µl/ml adopting cup plate method. The isolated ethereal oils exhibited significant *in vitro* anti-inflammatory effect and also inhibited the growth both Gram positive and Gram negative microorganisms at 50 µl/ml, 100 µl/ml and 200 µl/ml concentrations. The present work concluded the effectivenessphenolic ethereal oils isolated fromClove and Tulsi. Clove showed enhanced Anti-inflammatory and Anti-bacterial activity activities compared to Tulsi. The present study provides evidence that *Ocimum teniflorum* and *Syzygium aromaticum* phenolic ethereal oils contain medicinally important bioactive compounds justifying its traditional use.

Keywords: Phenolic volatile oils, Anti-inflammatory, Anti-bacterial activity, *Ocium tenuiflorum, Syzygium aromaticum*

EFFECT OF ETHANOLIC EXTRACT OF *TEPHROSIA PURPUREA* LINN ON LEARNING AND MEMORY

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ABSTRACT

The current study involved the screening of the ethanolic extract of dried herb of *Tephrosia purpurea*Linn. for its phytochemical constituents and pharmacological activity namely learning and memory activity. *Tephrosia purpurea* Linn. commonly known in Sanskrit as "Sharapunkha", is a highly branched, sub erect and herbaceous perennial herb. The dried herb of *Tephrosia purpurea* Linn. was initially subjected to qualitative phytochemical screening and presence of carbohydrates, proteins, flavonoids, alkaloids and tannins were determined. The effects on learning and memory were investigated using the Morris water maze model which was carried out for a period of 6 d. The animals were divided into 4 groups, each group consisting of 6 animals. Group I received2% Tween 80, which served as control. Group II received Piracetam (200 mg/kg), which served as standard for learning and memory activity. Group IIIand Group IV received Ethanolic extract of *Tephrosia purpurea*Linn.200 mg/kg and 400 mg/kg. The results were statistically analyzed using one way ANOVA followed by Dunnett's test. The results of Water Maze significantly enhanced the spatial and probe memory in rats treated with a dose of 200 mg/kg EETP. However dose of 400 mg/kg showed no effect on the Probe and spatial memory in the rats. Based on these finding it can be said that ethanolic extract of *Tephrosiapurpurea*Linn. showedimprovement in learning and memory. Further investigations using more experimental paradigms are required for confirmation of its potential activity.

Keywords: *Tephrosia purpurea* Linn., Morris water maze, Learning and memory

DEVELOPMENT AND EVALUATION OF CELIPROLOL TRANSDERMAL PATCHES

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ABSTRACT

Transdermal patches of celiprolol with a HPMC-drug reservoir were prepared by the solvent evaporation technique. In this investigation, the membranes of Eudragit RL100 and Eudragit RS100 were cast to achieve controlled release of the drug. The prepared patches possessed satisfactory physicochemical characteristics. Thickness, mass and drug content were uniform in prepared batches. Moisture vapour transmission through the patches followed zero-order kinetics. *In vitro* permeation studies were performed using a K-C diffusion cell across hairless guinea pig skin and followed the super case II transport mechanism. The effects of non-ionic surfactants Tween 80 and Span 80 on drug permeation were studied. The nonionic surfactants in the patches increased the permeation rate, Span 80 exhibiting better enhancement relative to Tween 80. The patches were seemingly free of potentially hazardous skin irritation.

Keywords: Celiprolol, Transdermal patches, Permeation rate

FORMULATION AND OPTIMISATION OF CIMETIDINE PRONIOSOMES: AN *IN VITRO* AND *EX VIVO* STUDY

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ABSTRACT

The aim of the study was to develop a proniosomal system for cimetidine, a potent H_2receptor antagonist that could efficiently deliver entrapped drug over a prolonged period of time. The proniosomal system was formulated by selecting various ratios of Span 60 and cholesterol using a coacervation-phase separation method. The formulated systems were characterised for drug excipient compatibility studies by Fourier transform infrared spectroscopy (FTIR), vesicle size determination by the particle size analyser, % drug encapsulation, drug-release profiles, field emission scanning electron microscopy (FESEM) for surface morphology, X-ray diffraction (XRD) and vesicular stability at different storage conditions. By using this method, the % drug loading that resulted by the encapsulation of proniosome was found to be 78%–89%. Increase in cholesterol and surfactant concentration increases encapsulation efficiency, but further increment decreases encapsulation. *In vitro* drug-release studies showed prolonged release of entrapped Cimetidine. The *ex vivo* data on the release of Cimetidine from proniosomal formulations have shown significantly increased per cent release and flux in comparison to the same dose of marketed preparation of Cimetidine. Stability studies were carried out in refrigerated conditions, and higher drug retention was observed. It is evident from this study that proniosomes are a promising prolonged delivery system for Cimetidine and have reasonably good stability characteristics.

Keywords: Proniosomes, Cimetidine, *In vitro* release, prolonged release, *Ex vivo* permeation studies, stability studies

GREEN CHEMISTRY APPROACH FOR SYNTHESIS OF BENZIMIDAZOLE DERIVATIVES

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ABSTRACT

Rational drug designing has made quick lead identification and optimization in drug discovery process. Thus Microwave accelerated organic synthesis (MAOS) is considered as an emerging green technology with environmentally friendly chemical processes in medicinal chemistry. In the current scenario, MAOS under controlled conditions has many applications for synthesis of newer drug molecules in the field of medicinal research. The use of microwave energy accelerates the organic reactions and offers several advantages over conventional methods in terms of reaction time, yield, purity, cost effectiveness and environmental impact. The benzimidazole ring system is one of the most important substructures found in pharmacologically active compounds such as anthelmintic drugs like albendazole, mebendazole, antiulcer agents such as omeprazole, lansoprazole, pantoprazole and antihistamine like astemizole etc. Therefore, the synthesis of benzimidazole derivatives has attracted much attention in organic synthesis. The synthesis of benzimidazole derivative is tried by both conventional methods and microwave technique to compare their yield and reaction time.

Keywords: Rational drug designing, Microwave accelerated organic synthesis, Benzimidazole derivative

FORMULATION AND EVALIUATION OF POLYHERBAL GEL BASED FACIAL PEEL-OFF MASK: REMEDIAL AGENTS FOR SKIN BACTERIAL INFECTION

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ABSTRACT

Herbal formulations have growing demand in the global market because natural remedies are more acceptable in belief that they are safer with fewer side effects than the synthetic ones. Skin is the protective layer of the body which is exposed to environmental pollution can further leads to diverse skin diseases. The peel off face gel is one of the most popular forms of topical application used to enhance the quality of facial skin. In this work, polyherbal peel off mask was prepared with *Aloe barbadenis Miller* extract, *Ocimum sanctum* linn extract, *Azadirachta indica* extract, Orange peel powder, Rice powder, Milk powder and others like polyvinyl alcohol, propylene glycol, polyethylene glycol 400, methyl paraben, lactic acid, sodium citrate, xanthum gum and distilled water. The formulations prepared were evaluated for their physical properties, organoleptic behavior, homogeneity, pH, viscosity, spreadability, drying time and stability study. Phytochemical evaluation of extract, Antibacterial Activity, MIC determination, Irritation tests were performed, and it was found to have entirely desired characteristics of a poly-herbal peel off mask. The results showed that the *Aloe barbadenis* Miller extract, *Ocimum sanctu*m linn extract, *Azadirachta indica* extract extracts has antibacterial activity with MIC value of 10%, 3 %, 5% respectively. Antibacterial activity of polyherbal peel-off mask gel produced inhibition zone 25.4 mm and 24.6 mm against mixed culture for Sample No01 and 25.1 mm and 24.3 mm against mixed culture Sample No02. It can be concluded that the peel-off mask gel prepared was effective, safe to be used as a topical preparation.

Keywords: Peel-off mask, Anti-acne, Poly-herbal, Antibacterial activity, Physico-chemical evaluation, Short-term stability study

ANTIMICROBIAL AND PHYTOCHEMICAL SCREENING OF *PONGAMIA PINNATA* BARK EXTRACT

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ABSTRACT

Karanja (*Pongamia pinnata*) an ancient plant described in Vedas. Ethnobotanically it is used in many diseases. The present investigation deals with the phytochemical screening of hydroalcoholic extract of *Pongamia pinnata* bark for various phytoconstituents like alkaloids, flavanoids, phenolic compounds, carbohydrates and saponins. The extract was tested for their antimicrobial activity against gram positive and gram negative bacteria and antifungal activity against aspergillus niger respectively by using agar well diffusion method. *Ponngamia pinnata* bark extract at the dose of 1 mg/ml dose exhibited significant anti bacterial and anti fungal property as that of standard drugs ciprofloxacin and flucanazole respectively.

Keywords: *Pongamia pinnata*, Hydroalcoholic bark, Phytochemical screening, Antimicrobial activities

CANNABINOID AS AN ANTI-CANCER DRUG

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ABSTRACT

Cannabis, also known as marijuana, is a plant *Cannabis sativa* a resin containing compounds called cannabinoids. Active compounds 9-THC, cannabidiol. Cannabis and cannabinoids has been shown to kill cancer cells in the laboratory when done on mice with cancer cells. Cannabinoids may protect against inflammation of the colon and may have potential in reducing the risk of colon cancer. Delta-9-THC has been shown to cause these effects by acting on molecules that may also be found in lung cancer cells and breast cancer. Cannabidiol (CBD) by orally to treat solid tumor. Cannabinoids make cancer cells starve to death and they prevented tumor angiogenesis; aprocess that forms new blood vessels and blockage for obtaining nutrients and oxygen and starve them to death. The mechanism is still unknown.

Keywords: Cannabis, 9-THC, Cannabidiol, Angiogenesis, Marijuana, Hepatocellular carcinoma

ANTI-ANXIETY INVESTIGATION OF HYDROALCOHOLIC EXTRACT OF *PHYLLANTHUS NIRURI* LINN

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ABSTRACT

The hydroalcoholic extract of the dried whole plant of *Phyllanthus niruri* Linn. was screened for anxiolytic activity on Wistar rats using the Elevated Plus Maze (EPM), Light and Dark Model (LND) and Novelty Suppressed Feeding Test. The results were confirmed by subjecting the rats to the restraint stress test model. Hydroalcoholic extract (HAPN), at doses of 200 mg/kg and 400 mg/kg b.w., were administered to the rats by oral route for a period of seven days. The screening of anti-anxiety activity using restraint test was carried out for a period of six days and the observations were recorded on all six days. The results were statistically analyzed using one way ANOVA followed by Dunnett's test. Both the test Groups showed a significant increase in % OAE (Percentage Open Arm Entries) and % TSOA (Percentage Time Spent in Open Arm) in the EPM test thus indicating anti-anxiety activity. The test Groups also showed a significant increase in NEL (Number of Entries in light) and TSL (Time Spent in light) in the LND test thus indicating anti-anxiety activity. In novelty suppressed feeding test, both the test groups showed a decreased latency to feed. As HAPN (400 mg/kg) showed the highest anti-anxiety activity in all the models used, it was selected for the restraint stress model test. The results obtained were significant when compared with the control, implying that the HAPN, at 400 mg/kg, exerts a more significant anxiolytic activity.

Keywords: *Phyllanthus niruri* Linn., Elevated plus maze, Light and dark, Restraint stress, Anxiolytic

NEPHROPROTECTIVE ACTIVITY OF *PLUMERIA RUBRA L*. AGAINST CISPLATIN INDUCED NEP HROTOXICITY AND RENAL DYSFUNCTION IN EXPERIMENTAL RATS

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ABSTRACT

The current study was designed to evaluate the nephroprotective effect of standardized hydroalcoholic extract of *Plum eria rubra L* against cisplatin induced nephrotoxicity in Wistar rats. Extract was administered orally at 3 dose levels (100,200,400 mg/kg). Vitamin E (250 mg/kg) was used as a Standard nephroprotective agent. The kidney function test (estimation of serum creatinine, albumin, blood urea nitrogen), oxidative stress study (estimation of superoxide dismutase, malondialdehyde activity) and histological examination of kidneys was conducted. The efficacy of *Plumeria rubra* was compared with Cisplatin treated group. Serum creatinine and BUN was significantly ($p<0.001$) elevated in Cisplatin treated group compared to control group. Hydroalcoholic extract of *Plumeria rubra* L (100,200,400 mg/kg) and Vitamin E (250 mg/kg) significantly ($p<0.001$) decreased the serum creatinine and BUN levels. Cisplatin exhibited significant ($p<0.001$) decrease in albumin when compared to control. Significant ($p<0.001$) increase in the serum albumin level was found in extract treated group compared to Cisplatin group. Significant ($p<0.001$) decrease inactivity of SOD was observed in the Cisplatin group as compared to control. *Plumeria rubra* (200 mg/kg) significantly ($p<0.001$) increased SOD levels. The extract (100, 200, 400 mg/kg) significantly ($p<0.001$) decreased MDA levels as compared to Cisplatin group. Histopathological examination of the kidneys also ameliorated Cisplatin induced renal tubular necrosis. Extract was found effective at all doses, although (200 mg/kg) was found to be more effective and comparable with standard group (Vitamin E 250 mg/kg). Present investigation revealed that *Plumeria rubra* L. resulted in dose attenuation of cisplatin induced renal damage in rats.

Keywords: *Plumeria rubra L*, Cisplatin, Nephrotoxicity, Creatinine, Oxidative stress, Vitamin E

PATTERN OF ANTIMICROBIALS USAGE IN OPEN ABDOMINAL SURGERIES

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ABSTRACT

Abdominal surgical procedures, including appendectomy, cholecystectomy and bowel surgery, may cause a variety of postoperative complications including surgical site infections. The likelihood of developing postoperative complications depends on the age and general health of the patient, surgical site and urgency of the procedure. The patients undergoing these surgeries are prescribed with more than one antimicrobials as empirical or prophylactic therapy. Hence, our study aims at evaluating the drug utilization pattern of antimicrobials in the open abdominal surgery. This hospital based prospective observational study included 114 subjects from the General Surgery department at a tertiary care hospital in India for a period of 6 mo. The data was collected from various medical case sheets and nursing notes in a predesigned data collection forms. All the prescriptions containing antibiotics were evaluated and prescribing patternwas evaluated using John Hopkins Antibiotic Guidelines. Amongst the study population, 57.8% were inpatients and 42.1% were out-patients. The male patients were more (71%) and 78.9% of the study population underwent emergency surgery. The most common surgery conducted was hernioplasty 48.2%. Majority of the prescription comprised of antibiotic therapy (82.01%) amongst which thethird generation Cephalosporins (70.96%) were prescribed the most, as prophylaxis. A small population of 7.8%who were on antimicrobial therapy developed ADR. This study therefore, highlights the necessity to consider evaluation of antimicrobial prescription and identification of errors by the clinical pharmacist, as an important initiative in order to provide a safe and individualised therapeutic regimen to prevent SSI and its complication in surgical patients.

Keywords: Drug utilization evaluation, Antimicrobials, Surgery

PHYTOCHEMICAL AND BIOLOGICAL EVALUATION OF *CUCUMIS SATIVUS* LEAF EXTRACT

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ABSTRACT

Cucumber (*Cucumis sativus*) is a widely cultivated plant (Family: **Cucurbitaceae**). It is a creeping vine that bears **cucumiform**, fruits that are used as **vegetables**. Traditionally, *Cucumis sativus* possesses *a*nti-diarrhoeal, anti-urolithiatic, anti-inflammatory, anti-hypertensive, proteolytic, anti fungal, antioxidant and anti panic activities. The leaves of this plant is used for headache, seeds as diuretic, the fruit juice of this plant is used as nutritive and as a demulcent in anti-acne lotions. In the present study the ethanolic leaf extract of *Cucumis sativus* is screened for its phytochemical and biological activities (anti-urolithiatic and anti-oxidant activity). The results concluded that the ethanolic leaf extract of *Cucumis sativus* possessed significant anti-urolithiatic and anti-oxidant activity when compared with the standard cystone tablets and ascorbic acid.

Keywords: Urolithiatic, Oxidative, Panic, Phytoconstituents, Cystone

COMPARISON OF SAFETY AND TOXICITY OF LIPOSOMAL DOXORUBICIN VS CONVENTIONAL ANTHRACYCLINES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ABSTRACT

Anthracycline is one of the most effective agents for both early and advanced breast cancer. However, the potential benefits of conventional anthracyclines are limited by the risk of cardiotoxicity, which is clearly related to cumulative dose. Main aim of this study is Comparison of safety and toxicity of liposomal doxorubicin vs. conventional anthracyclines. Broad search strategy with special emphasis on randomized controlled trials, using electronic databases was done. Eligible studies included randomized controlled trials directly comparing the efficacy and cardiotoxicity of liposomal doxorubicin-based chemotherapy with conventional doxorubicin in advanced breast cancer with adequate data. Odds ratios or hazard ratios with 95% confidence intervals were used to assess the efficacy and cardiotoxicity in a fixed-effects or random-effects model. Ten randomized controlled trials containing efficacy and data from a total of 2,889 advanced breast cancer patients were included in this report. Liposomal doxorubicin-based chemotherapy was associated with a significant reduction in the risk of cardiotoxicity ($p = 0.03$) and a significant improvement in the overall response rate compared with conventional doxorubicin. An apparent improvement in progression-free survival for patients treated with liposomal doxorubicin-based chemotherapy was noted; however, this difference was not significant ($p = 0.12$). In terms of overall survival, no significant difference between the two chemotherapy regimens was noted ($p = 0.93$).

Keywords: Liposomal doxorubicin, Anthracyclines, Cardiotoxicity

DRUG UTILIZATION PATTERNS OF ANTIHYPERTENSIVES IN CARDIOLOGY WARDS IN A TERTIARY CARE HOSPITAL

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Drug utilization studies on Antihypertensive datas are constructive for implementation of rational use of drugs among population. The aim of the study is to conduct the prescribing survey of antihypertensives in moderate to severe hypertension and in hypertensive complications by the physicians of a tertiary care hospital. Objectives of the study are to investigate the 1) most commonly used antihypertensive drug groups, 2) To determine the preferred drug which suits all age groups and controls symptomatic blood pressure and 3) the antihypertensive drug preferred in co morbid conditions. A prospective observational study was conducted in Inpatients diagnosed with cardiac diseases above 18 y of age in Cardiology wards of a tertiary care hospital for a period of 6 mo. A suitable data collection form was prepared and used to collect data from patient's treatment charts, laboratory investigations and past medical history. Amongst the 285 study subjects results showed a male predominance of 69% (197) over female's 31% (88). Most of the study subjects belonged to the age group of 51-70 y. 54.7% (156). A total of 3020 drugs comprising 192 unique drugs were used by the study population out of which 648(21.4%) were from the antihypertensive class. Diuretics 296(45.6%) were most commonly prescribed drug in monotherapy, and amongst the combination therapy Calcium channel blockers 12(2%) were found to be leading. Beta blockers 195(30%) and calcium channel blockers 79(12.20%) were most commonly used in patients with hypertension associated cardiovascular disease. Among the concomitant diseases like diabetes mellitus and hyperlipidemia, angiotensin receptor blockers 38(5.90%), and angiotensin converting enzyme inhibitors 35 (5.4%) were most commonly used. Monitoring prescribing trends of Anti Hypertensive's helps in portraying the cautious drug related problems, complications and also to promote the rational therapeutic decision making. Among the given treatment chart, all drugs were well tolerated and subject response was also found to be satisfactory. Despite the acceptable outcomes, conclusive results cannot be drawn from this study because of the restrictions in study design, more case control or randomized control trials are required to test the aforementioned hypothesis.

Keywords: Drug utilization studies, Antihypetensives, Diuretics

DEVELOPMENT, EVALUATION AND TARGETING OF STAVUDINE LOADED SERUM ALBUMIN POLYMER BASED NANOCARRIERS TO HIV RESERVOIRS

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ABSTRACT

Stavudine is an antiretroviral drug that is part of the nucleoside reverse transcriptase inhibitor (NRTIs) family, which is used to delay the progression of HIV infection. Particulate systems like nanoparticles represent a very promising drug delivery system of controlled and targeted drug release. The aim of present study was to formulate and evaluate bovine serum albumin (BSA) nanoparticles of stavudine. The desolvation technique was used to prepare nanoparticles and coated with 1% v/v polysorbate 80 to improve the targeting of drugs to the organs (HIV reservoirs). The formulated nanocarriers were then characterized and subjected to stability studies over a period of three months. Biodistribution studies were also investigated for the best formulation (S1) to determine the targeting efficiency of nanocarriers loaded stavudine. The prepared stavudine loaded BSA nanocarriers have shown mean particle size below 300 nm, zeta potential in the range of-16.5 Mv, encapsulation efficiency in the range of 50.10 to 73.7%, drug loading in the range of 14.73 to73.84%. Cumulative % drug release was in the range of 24.72 to 71.20% and release kinetics studies showed that the drug release was controlled by anomalous diffusion, i.e. the mechanism of drug release was controlled simultaneously by diffusion and erosion of the matrix type formulations. The stability studies over a period of three months confirmed the stability of BSA nanoparticles. Biodistribution studies demonstrated that nanoparticles coated with 1% v/v polysorbate 80 were able to reach the HIV reservoirs in an amount higher than that of uncoated stavudine nanoparticles or pure drug itself. The method adopted is simple and the biodistribution studies demonstrated that nanoparticles coated with 1% polysorbate 80 were able to reach the selected organs in an amount higher than that of uncoated stavudine nanoparticles or pure drug itself.

Keywords: Stavudine, Antiretroviral drug, Nucleoside reverse transcriptase inhibitor

PRESCRIBING PATTERN OF MEDICATIONS USED FOR INSOMNIA AMONG PSYCHIATRIC PATIENTS, BANGALORE, KARNATAKA

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ABSTRACT

Insomnia is by far the most common disturbance and is often associated with concurrent psychiatric illness, in particular, anxiety and mood disorders. Our study aims to analyse the prescribing pattern of medications used forsleep related symptomsamong newly diagnosed psychiatric patients. A hospital based cross sectional study conducted in OPD of Psychiatry department in M. S Ramaiah teaching hospital for a period of six months. All newly diagnosed psychiatric patients above 18 y who didn't complaint of sleep related symptoms were included in the study. The Sleep quality of all the study population was assessed using Pittsburgh sleep quality index(PSQI). The prescribing pattern of patients with compromised sleep were analysed. A suitable data collection form was prepared and used to collect data from patient case records, medication charts, laboratory data along with interview with patient care taker or patient. The study involved 256 patients with mean age of population was 37.95±14.15 were recruited for the study. Of the study population 148(58%) were males with predominance while 108(42%) werefemales. Among other distinctive psychiatric disorders 42%of the study population were diagnosed with depression,14% with ADS and NDS, 12% with Anxiety, 24(9%) with Psychosis, 9(3%) with OCD and other diseases 34(13%) like mania, impulsecontrol disorder, adjustment disorder, etc as co morbidities. It comprises of 62 (25%) of study population with good quality of sleep and194 (75%) with bad quality of sleep. Benzodiazepines(50%) were most common class of drugs prescribed; 25% with antidepressants like Escitalopram 73(28%) and Mirtazapine 13(5%);25% with Anti-psychotics like Risperidone 54(21%), Quetiapine 7(2%) etc. Among Benzodiazepines, Clonazepam (53%)were most commonly prescribed to improve sleep quality among psychiatric patients. It is important to assess the sleep quality among psychiatric patient regardless of their complaints and diagnosis. Most of the study population was affected with compromised sleepeven though none of them ever complained any sleep disturbance until otherwise theinvestigator approached for the assessment of sleep quality. Our study emphasis on implementation of sleep clinic or mandatory screening for sleep quality among psychiatric patients and addresses the sleep related symptoms for appropriate selection of management strategies.

Keywords: Insomnia, PSQI, Antipsychotics, Benzodiazepines, Sleep quality

PHARMACOLOGICAL INVESTIGATION OF ETHANOLIC EXTRACT OF *THESPESIA POPULNEA* LEAVES

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ABSTRACT

The present study explored the potential effect of *Thespepsia populnea* for central nervous activity. *Thespesia populnea* (L.) Sol. ex. Correa named as "Indian tulip tree" belongs to family Malvaceae. Ethanolic extract of *Thespesia populnea* was evaluated using Rotamex for motor coordination activity and Morris Water Maze for learning and memory. Ethanolic extract at a dose of 200 mg/kg and 400 mg/kg (suspended in 2% tween 80) were administered to rats by oral route for a period of seven days. The control group received 2% Tween 80 prepared in distilled water. Diazepam (2 mg/kg) and Piracetam (200 mg/kg) were used as standard drugs for the motor coordination and learning and memory respectively. The results were statistically analysed using one way ANOVA followed by Dunnett's test. Administration of dose of 200 mg/kg showed muscle relaxant activity similarto the standard by decrease in time of fall from rotarod as compared to controlindicating muscle relaxant activity. When tested on Morris Water Maze both the test groups showed a significant decrease in latency to platform and TOQ while a significant increase for TOP and TPQ as compared to control. Both the test groups showed effects similar to the standard for all the parameters, however dose of 400 mg/kg shows better effect on learning and memory. Based on these findings it can be said that *Thespesia populnea* has muscle relaxant activity at low doses, but was not seen at higher doses. While it also proved to have an enhancement in learning and memory.

Keywords: ANOVA-analysis of variance, TOQ-time in other quadrants, TOP-time on platform, TPQ-time in platform quadrant

STUDY OF POLYMORPHISM ON SELECTED DRUGS: PARGEVERINE HYDROCHLORIDE AND PYRIMETHAMINE

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ABSTRACT

Different crystal structures of polymorphs lead to variations in physical properties of molecules owing to variations in dimensions, symmetry, shape, capacity and void volumes. As interactions between elements in crystal lattice differ, variability in melting points, surface free energy, spectroscopy, compatibility, flow, blending properties and dissolution rates arise thus creating possibilities to improve bioavailability, stability and manufacturability of drug products. The present study deals with the preparation of polymorphic and solvatomorphic forms of Pargeverine Hydrochloride and Pyrimethamine based on literature, polarity of solvents, solubility profile by using single or mixed solvent technique. On the basis of melting point, solid state FTIR and DSC study it is observed that polymorphic forms of selected drugs do not seem to exist with the chosen single solvent and mixed solvent system used. Possibilities with other single solvent and mixed solvent systems are being explored.

Keywords: Polymorphs, Solvatomorphic form, Single solvent technique, Mixed solvent technique

TARGETED DRUG DELIVERY SYSTEM FOR CANCER-CARBON NANOTUBE

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ABSTRACT

Cancer is a very serious problem and second largest cause of death after heart diseases. Current treatment available in cancer therapy is chemo, radiation and surgery. Depending on stages of cancer the treatment is decided. Drawback of conventional cancer chemotherapy is the damage of surrounding healthy cells. Hence major challenge in treatment is selective targeting to cancer cell. Nanotechnology helps to overcome this challenge. Carbon nanotubes with oncosensor are practisized in cancer chemotherapy as a targeted drug delivery system. Hence in this review, we seek to explore the biomedical applications of carbon nanotubes (CNTs), with particular emphasis on their use as therapeutic platforms in oncology. Carbon nanotube loaded with anticancer drug is used to treat various cancer like breast cancer, ovarian cancer, bladder cancer, cervical cancer, gastric carcinoma and lymphoma. Functionalized carbon nanotubes conjugated with anticancer drug like doxorubicin, cisplatin, methotrexate are tested *in vitro* and *in vivo* successfully.

Keywords: Carbon nanotubes, Cancer, Chemotherapy, Targeted drug delivery system

MICROEMULSION BASED GEL OF SULCONAZOLE NITRATE FOR TOPICAL APPLICATION

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ABSTRACT

Topical drug delivery is the most suitable drug delivery system for the dermatological disorders such as fungal infections. But only to the limited extent the topical formulations based on conventional excipients could serve the purpose. The advent of new drug delivery technologies like microemulsions and nanoemulsions can increase the efficacy and safety of the topical products. Sulconazole nitrate is commonly used in fungal infections. For its better and effective delivery, an attempt was made to formulate as sulconazole loaded microemulsion gel. Microemulsion was prepared by water titration method and characterized for globule size, zeta potential, viscosity and pH. Then the sulconazole loaded microemulsion gel was formulated and evaluated for drug content, *in vitro* drug release and kinetic studies. *In vivo* skin irritation study on albino rats was also carried out. F1 formulation showed highest drug content of 95.88±0.3% and % cumulative drug release was found to be 88.75 % release in 8 h. *In vivo* skin irritation study confirmed the safety of the formulated sulconazole loaded microemulsion gel for topical application.

Keywords: Microemulsion, Sulconazole nitrate*, In vitro* release, Fungal infection

EFFECT OF *BOMBAX CEIBA* BARK AND SEEDS POWDER ON ALLOXAN INDUCED DIABETIC RATS AS AN ANTI-DIABETIC AND OXIDATIVE STRESS MITIGATING AGENTS

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ABSTRACT

The present study was carried out to investigate the effect of *Bombax ceiba on* diabetic and oxidative stress in the Wistar albino rats brain. The evaluation was conducted by using *in vivo* methods in normal as well as alloxan and ammonium acetate induced rats. Diabetes was induced in the Wistar strain albino rats by alloxan at a dose of 150 mg/kg body weight and ammonium acetate was induced at a dose of 125 mg/kg body weight to create oxidative stress condition. The plant powder of *Bombax ceiba* bark and seedswere administered for 60daysat doses of 200 mg/kg body weight to the treated group. Blood Glucose level and free radical changes were observed in the brain by assessing scavenging enzymes after the rats were sacrificed. Various parameters were studied for the free radicals such as catalase, reduced glutathione, superoxide dismutase and glutathione peroxidase along with blood glucose level. The results revealed that there was asignificant increase in the level of catalase, reduced glutathione, superoxide dismutase and glutathione peroxidase were observed in*Bombax ceiba* administered treated group of rats. Simultaneously, there was a significant decrease in the blood glucose level were noticed in *Bombax ceiba* treated group of rats. Thus, from this study we conclude that the bark and seeds powder of *Bombax ceiba* exhibited significant anti-hyperglycemic and oxidative stress mitigating activities in a diabetic rats.

Keywords: Anti-diabetic, Oxidative stress, Serum, Catalase, Reduced glutathione, Superoxide dismutase, Glutathione peroxidase, Anti-hyperglycemic

DESIGNING AND OPTIMIZATION OF CONTROLLED POROSITY OSMOTIC PUMP OF GLICLAZIDE

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ABSTRACT

A controlled porosity osmotic pump of cellulose acetate for osmotic delivery of Gliclazide has been developed and influence of different pore forming agents and osmotic agents on *in vitro* drug release was investigated. The capsule membrane was prepared by the phase inversion technique. To ensure the osmotic delivery of drug, two approaches were adopted: *(i)* PEG-400 was used in different concentrations as pore forming agent (*ii*) the drug was encapsulated with osmogent sodium chloride to increase the osmotic pressure of the core. Formulations were evaluated for physical characteristics like weight variation, thickness, void volume, tensile strength and *in-situ* pore formation. Dye test revealed *in-situ* pore formation in asymmetric membrane. A 3^2 full factorial design was employed to optimize the concentration of pore forming agent (X_1) and osmogent (X_2) as independent variables on the release of drug. The developed system was able to control the gliclazide release by increasing the release through membrane using osmotic agent. The *in vitro* release study showed that as the concentration of pore forming agent was increased the release rate also increased. The *in vitro* release kinetics studies reveal that optimized batch fits well with Zero order model. Both the selected independent variables had a significant influence on the amount of drug released. The transformed values of the independent and dependent variables were subjected to multiple linear regression analysis to establish a full-model second-order polynomial equation. The coefficient of independent variables suggests that Osmotic agent Sodium chloride is the major contributing factor for the amount of drug released ($b_1 > b_2$). A contour plot is presented to represent the effect of independent variables on the amount of drug released. A checkpoint batch was also prepared to prove the validity of the mathematical model. Optimization studies showed asymmetric membrane capsule with 70% PEG as pore forming agent and 1.5% of sodium chloride as osmogent as the best formulation. The present study demonstrates that asymmetric membrane capsules were successfully prepared and evaluated using dip coating process for delivery of gliclazide.

Keywords: Cellulose acetate, Sodium chloride, Controlled porosity, Gliclazide, PEG-400

IN VITRO AND *IN VIVO* STUDIES ON CARDIOPROTECTIVE ACTION OF *TAMARINDUS INDICA*. L LEAF EXTRACT

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ABSTRACT

Global interest lies in determining the therapeutic potential of herbal drugs. This is because the drugs obtained from herbal source have potent pharmacological activity with minimal side effects. The main aim of the study was to determine the possible cardioprotective activity of ethanol extract of *Tamarindus indica.* L leaf. The test extract was screened for the cardioprotective activity, *in vitro* studies for various concentrations of test extract was carried out using modified Langendorff's assembly using Digoxin as the standard. *In vivo* studies were performed by Doxorubicin induced heart failure model in Wistar albino rats where in Doxorubicin and test extract (200 mg/kg and 400 mg/kg)/Digoxin (100 µg/kg) was administered simultaneously for a period of 7 d. The ethanol extract of this plant showed significant cardioprotective effect *in vitro* by increasing the force of contraction, heart rate and cardiac output. *In vivo* studies revealed that the extract decreasedthe prolongation of QT and RR intervalof ECG and also lowered the serum enzyme levels like SGOT, SGPT, LDH, CPK and cardiac troponin indicating cardiac protection. The results obtained in this study is also supported with the histopathlogical examinations of heart tissue sections. Hence, it is concluded from the study that ethanol extract of *Tamarindus indica* leaf possess cardioprotective activity. It also suggests that the biologically active phytoconstituents such as phenolic compounds, tannins and flavonoids present in the extract may be responsible for exhibiting significant cardioprotective activity.

Keywords: *Tamarindus indica*, Doxorubicin, Cardioprotective activity

COMPUTATIONAL SUBTRACTIVE GENOMICS AND GENE EXPRESSION STUDIES APPROACH FOR THE IDENTIFICATION OF NOVEL DRUG TARGETS IN *Mycobacterium tuberculosis*

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ABSTRACT

Even though the global incidence of Tuberculosis (TB) is slowly decreasing, antibiotic resistance of the *Mycobacterium tuberculosis* (MTB) bacteria is another problemwhichneedsimmediate attention. Identification of new drug targets and design of new drug like inhibitor scaffolds for the emerging targets may help to overcome this problem. One of the methodsfor the identification of new drug targetsis the computational subtractive genomics in combination with gene expression studies, in which the complete proteome of the pathogen is selectively filtered in step-wiseto identify few potential drug targets. In the current research, theprimary stepinvolved is theidentification ofnon-host proteins in metabolic pathways of the pathogen which are essential for survival. We applied subtractive genomics on the complete proteome ofthe tuberculosis bacteria against humansusingstandalone BLAST, CD-HIT and Database of Essential Genes (DEG)followed by an additional filtration based on codon adaptation index (CAI),andeffective number of codon (ENC) valuescalculated at CAIcal web-server. The subtractive genomics approach resulted in 674 hypothetical proteins having CAI and ENC values ranges from 0.82to 0.430 and 59to 25 respectively. Top 30% of the proteins based on CAI value>0.7 and further confirmed by an values ENC<40were proposedas potential drug targets. The study involving computational subtractivegenomics and further bioinformatics analysis of the resulting hypothetical proteins has the potential for the rapid identification of noveldrug targets, which will improve theoverall research directions inidentifying new inhibitormoleculesby virtual screensas a cure of Tuberculosis.

Keywords: Mycobacterium tuberculosis, Subtractive genomics, Gene expression, BLAST, CD-HIT, DEG, CAI, ENC

CHARACTERIZATION AND EVALUATION OF HERBAL DRUG LOADED WAFERS FOR DIABETIC WOUND HEALING

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ABSTRACT

Diabetes is a worldwide chronic disease caused by genetic and environmental factors, which are driving national and international increases in the incidences of this disease, particularly within increasingly obese and/or elderly populations. Foot ulceration is one of the most significant complications of diabetes, and will affect 15-20% of people with diabetes at some point in their lives. Diabetic foot ulcers (DFUs) often fail to heal properly, and do not progress through the normal stages of wound healing, i.e. hemostasis, inflammation, proliferation and maturation, and remodeling. The aim of the formulation would be to treat diabetic foot ulcers. High levels of blood glucose caused by diabetes, can over time, affects the nerves and lead to poor blood circulation, and making hard for blood- needed for skin repair- to reach areas of the body affected by sores or wound. Wafers are developed as drug delivery systems that can be applied directly to the surface of suppurating wounds. These wafers instantaneously adhered to the surfaces, absorbing water and transforming from glassy, porous solids to highly viscous gels.

Keywords: Diabetes, Chronic disease, Diabetic foot ulcers

VALIDATION OF DEVELOPED ANALYTICAL METHOD FOR ESTIMATION OF HALCINONIDE IN BULK AND CREAM DOSAGE FORM

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ABSTRACT

The main objective of the present study was production of betalaines from hairy root culture of *Beta vulgaris* and its use in pharmaceutical formulations as a natural colourant. Hairy roots were initiated using different strains of *Agrobacterium rhizogens* such as A.2/83, A.20/83 and LMG 150;LMG 150 was found to initiate large number of hairy roots. Hairy roots were further grown on MS media, sub-cultured in MS basal media and betalaine content was estimated. Paracetamol syrup was prepared using extracted betalainesas a colouant at different concentrations of 100, 200 and 300 mg/litre. Stability of the prepared formulations was carried out at different temperature (20, 30 ^{0}C and 40 ^{0}C) and pH (4, 5 and 6) for 45 d. Formulation with 300 mg/litre betalaines exhibited better stability at 20^{0}C and pH 6 (40% degradation), whereas colour was rapidly degraded at high temp and acidic pH (80 % degradation). Thestudy revealed that low temperature and slightly acidic pH will enhance the stability of betalaines.

Keywords: *Beta vulgaris,* Betalaines, *Agrobacterium rhizogens,* Hairy root culture, Paracetamol syrup

NEUROPROTECTIVE ACTIVITY OF *SECURINEGA LEUCOPYRUS* AGAINST ETHANOL INDUCED COGNITIVE IMPAIRMENT

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ABSTRACT

Spatial memory, according to neuroscience, is the part of memory, responsible for recording one's environment and its spatial orientation. Memory is one of the complex functions of the brain. It ultimately involves multiple neuronal pathways and neurotransmitters. Cognitive disorders like Alzheimer's disease, delirium, depression and schizophrenia are the results of impairments in learning and memory. All these diseases have a huge burden on society and their prevalence is still growing. Learning is a process of acquiring knowledge about the world and memory is its retrieval. Spatial memory is highly relevant in biology because it is related with both individual and species survival. Among behavioural tests, one of the most suitable devices for measuring spatial learning and memory is the 8 Arm Radial maze. The present work shows the effectiveness of various extracts of *Securinega leucopyrus* on rats to reach the paired arm in radial maze. The results suggest that both the extracts have shown memory enhancement activity as a part of treating Alzheimer's disease.

Keywords: *Securinega leucopyrus*, Alzheimer's, 8 Arm radial maze, Paired arm

PHARMACOLOGICAL SCREENING OF ANTI ULCER AGENTS-A REVIEW

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ABSTRACT

Gastric ulcer is one of the most serious gastrointestinal disease. Ulcers are mainly caused by imbalance between the gastroduodenal mucosal defensive factors versus aggressive factors. Animal models have played a significant role in clinical research. In gastric ulcer disease, they have helped to understand the basic mechanisms responsible for the formation of gastric ulcers and its treatment. In early period of studies, ulceration was induced by damaging the gastric mucosa which was unphysiological. The limited number of animal models for the study of gastric ulcer has hindered the process of research in gastrointestinal disorders. Therefore it is necessary to review the literature for available animal models of gastric ulcer to screen antiulcerative agents. Available models include primates, rats, mice, rabbits, cats, guinea pigs, ferrets and pigs. Many scientists are using different animal models to induce gastric ulcer such as Pylorus ligated rat, Alcohol induced ulcers, NSAIDs induced ulcers, Stress ulcers, Histamine induced gastric ulcers, Cysteamine induced duodenal ulcers. The main aim is to provide scientific information about different animal models to induce gastric ulcers as well as for the screening of antiulcer activity. In this review, authors presented different experimental animal models used in clinical research during past few decades to carry outantiulcerative activity of new agents as well as its underlying mechanisms.

Keywords: Gastric ulcer, Animal models, NSAIDS, Antiulcerative activity

A COMPARATIVE STUDY OF DATA MINING ALGORITHMS USED FOR SIGNAL DETECTION IN FDA ADVERSE EVENT REPORTING SYSTEM DATABASE

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ABSTRACT

Signal detection is a technique in pharmacovigilance for the early detection of new, rare reactions (desired or undesired) of a drug. This study aims to compare and appraise the performance of data mining algorithms used in signal detection. Most commonly used three data mining algorithms (DMAs) (Reporting Odds Ratio, Proportional Reporting Ratio and Information Component) were selected and applied retrospectively in USFDA Adverse Event Reporting System database to detect five confirmed Drug Event Combinations. They were selected in such a way that the drug is withdrawn from the market or label change between 2006-2015. A value of ROR-1.96SE>1, PRR≥2, $\chi 2>4$ or IC-2SD>0 were considered as the positive signal. The data mining algorithms were compared for their sensitivity and early detection. Among the three data mining algorithms, Information Component was found to have a maximum sensitivity (100%) followed by Reporting Odds Ratio (60%) and Proportional Reporting Ratio (40%). Sensitivity associated with the number of reports per drug event combination and early signal detection suggested that information component needs comparatively fewer reports to show positive signal than the other two data mining algorithms. ROR and PRR showed comparable results. Early detection of a reaction is possible using signal detection technique. Information component was found to be sensitive method compared with other two data mining algorithms in FDA Adverse Event Reporting System database. As the number of reports of drug event combination increased, the sensitivity and comparability of data mining algorithm also increased.

Keywords: Signal detection, Data mining algorithms, FDA AERS database, Disproportionality analysis, Pharmacovigilance

FORMULATION DEVELOPMENT AND EVALUATION OF FAST DISSOLVING FILMS OF EBASTINE

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ABSTRACT

An attempt was made to develop a novel fast dissolving film (FDF) of ebastine to overcome the limitations of fast dissolving tablets like fear of swallowing and choking, expensive manufacturing processes storage, handling and stability issues. FDFs of ebastine were prepared by the solvent casting method using HPMC E-15 and HPMC K-4 as film base with different concentrations of crospovidone as super-disintegrant and PEG-400 as a plasticizer. Preformulation studies including compatibility studies were done using IR spectral analysis and differential scanning colorimetry. Physicochemical parameters of the films were evaluated. Scanning electron microscopy revealed the morphology of the films. Mechanism of drug release was identified through *in vitro* dissolution studies. The optimized formulation F_4 with HPMC E-15 base and F_7 with HPMC (E-15, K-4) base containing 8% crospovidone showed maximum cumulative percentage release of 99.34 % and 97.42 % at the end of 30 min, respectively in 0.1 N HCl and *in vitro* disintegration time of 29.6 and 34.6 seconds, respectively. The release of the drug from the films showed first order kinetics. Accelerated stability studies were performed as per ICH guidelines at 40 °C±2 °C/75±5% RH for three months and no significant changes were observed. These studies demonstrated that 8% crospovidone with HPMC as a film base was suitable for developing fast dissolving films of ebastine. The formulation was thus found to exhibit faster onset of action with improved drug delivery.

Keywords: Ebastine, Fast dissolving films, HPMC E-15, HPMC K-4, Crospovidone, *In vitro* dissolution studies

ASSESSMENT OF ATTITUDE TOWARDS SELF-MEDICATION AMONG PREGNANT WOMEN

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ABSTRACT

WHO defines self-medication practices as the selection and use of medicines by individual to treat self-recognized illness. Self-medication during pregnancy is of high interest, because there could be health-risk for both the mother and child. 10% or more birth defects are reported due to maternal drug exposure. Cross-sectional questionnaire based observational study was carried out among 260 pregnant women attending a tertiary care hospital to assess the level of attitude towards self-medication. Descriptive and chi-square statistics were used for analysis. In our study, 75% of participants agreed that self-medication is part of self-care. 90.4% disagreed that self-medication can be recommended to pregnant women. 83.1% of the participants felt that it was necessary to provide information regarding various aspects of medicines while dispensing. The study revealed that 20.8% of participants agreed self-medication was useful in both mild and serious conditions where as 49.6% had neutral opinion. 65.4% of the participants had an opinion that the simultaneous use of prescription drugs with OTC products was potentially dangerous. Majority of (63.5%) respondents agreed to the fact that self-medication can hide disease symptoms. 95.8% of participants agreed that in case of side effects physicians help should be sought. Mean attitude score had a positive association with their knowledge on drug interactions and effects of prolonged drug usage (p value: <0.05). Overall, study participants had positive attitude towards self-medication. Healthcare professionals should encourage appropriate practice of self-medication during pregnancy to minimise the associated health risks.

Keywords: Self-medication, Pregnant women, Attitude

EVALUATION OF *GALPHIMIA GLAUCA* STEM METHANOL EXTRACTFRACTIONS FOR ANALGESIC, AND ANTI-INFLAMMATORY ACTIVITIES

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ABSTRACT

This current investigation assesses *in vivo* central and peripheral analgesic effects and anti-inflammatory properties of fractions obtained from *Galphimia glauca* stem methanol extract. The laboratory models Swiss albino mice and Wistar albino rats were employed for the studies. The *Galphimia glauca* stem methanol extract was subjected to fractionation with solvents like hexane, chloroform, ethyl acetate, methanol and water. Orally the dose range of 100, 200 and 400 mg/kg was given for one day for evaluating analgesic (hot-plate test, tail clip test, writhing test and formalin test) and week days for assessing anti-inflammatory activity (carrageenan and cotton plate test methods) respectively. The experimental studies were further conducted for determining the involvement of central and peripheral receptor actions in the analgesic activity of the extract by pre-challenging it with naloxone and acetic acid respectively. The *in vivo* anti-inflammatory studies were conducted using carrageenan induced rat paw edema model and cotton pellet granuloma test. The LD_{50} of the extract was found to be>2000 mg/kg b.w. Themethanol fraction at 400 mg/kg dose exhibited significant ($P \leq 0.001$) and dose-dependent analgesic and anti-inflammatory activity. It also exhibited central and peripheral analgesic actions when treated with naloxone and acetic acid respectively. The results revealed that the stem methanol fraction has more potential in terms of analgesic and anti-inflammatory properties.

Keywords: *Galphimia glauca, A*nalgesic activity, Anti-inflammatory activity

EVALUATION OF MEDICATION ADHERENCE AND TREATMENT SATISFACTION AMONG PATIENTS IN PSYCHIATRY OUTPATIENT DEPARTMENT

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ABSTRACT

The aim of the study was to assess the treatment satisfaction and medication adherence among psychiatric patients. The study was conducted in the psychiatry outpatient department of M. S Ramaiah Hospitals Questionnaires were provided to the patients who met the inclusion and exclusion criteria to obtain information on the patient's demographics, adherence and overall satisfaction with the treatment. Descriptive statistics, one way ANOVA, Pearson's correlation, independent t test was employed for statistical analysis. 127 patients enrolled for the study of which 57% were male and 43% were female. The mean adherence in the patients was observed to be 90.48±13.945. The mean satisfaction in the effectiveness domain was found to be 67.46±18.283, the side effect domain was 80.03±28.131, the convenience domain was 74.18±11.315 and global satisfaction was 66.82±21.132. Statistically significant difference was observed in the means of effectiveness ($p<0.02$), convenience ($p<0.02$) and global satisfaction ($p<0.01$) but not with side effects ($p = 0.093$) among the different levels of adherence. High adherence was observed among the study population and was associated with high treatment satisfaction. Measures can be taken to ensure the continued adherence towards the treatment through counselling and regular follow ups.

Keywords: Medication adherence, Patient satisfaction, Psychiatry

DESIGN AND EVALUATION OF MOUTH DISSOLVING TABLETS OF LAMOTRIGINESOLID DISPERSIONS

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ABSTRACT

This research work was designed to enrich the solubility of Lamotrigineby solid dispersion technique and to develop the mouth dissolving tablets. Lamotrigineis an epilepsy drug which belongs to BCS Class II having low solubility and therefore low oral bioavailability (98%). In the present study, SDs of Lamotrigine with water soluble carrier like PEG6000 were prepared by solvent evaporation methodin the weight ratios of 1:1, 1:2, 1:3 and 1:4and the optimized solid dispersion (SD) was used in the development of Lamotriginemouth dissolving tablets. SDswas evaluated for drug content and *in vitro* dissolution studies. The results revealed that the dissolution of Lamotrigine SDs was improved greatly at 1:3 ratio when compared with that of remaining ratios which shows 94.84% of drug release within 60 min. The above optimized SDs was formulated as mouth dissolving tabletsby direct compression using superdisintegrants like croscarmellose sodium (CCS), (F1-F3), crospovidone (CP), (F4-F6), andsodium starch glycolate (SSG), (F7-F9). Lamotrigine mouth dissolving tablets were evaluated for pre-compression and post compression parameters. Amongst the formulations prepared (F1-F9), F9 was found to be effective formulation comprising of SSG which showed the drug release of 98.15% within 18 min.

Keywords: Lamotrigine, Croscarmellose sodium, Crospovidone, Mouth dissolving tablets, Sodium starch glycolate, Solid dispersion

SECURINEGA LEUCOPYRUS IMPROVES MEMORY AND LEARNING IN ALZHEIMER'S MODEL: AN EXPERIMENTAL STUDY IN RAT

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ABSTRACT

Alzheimer's disease (AD) affects the central nervous system causing progressive degeneration of neurons, which affect cognitive function of the individual. So, the aim of this study was to identify the potential of aqueous and methanolic stem extracts of *Securinega leucopyrus* to be used as a therapeutic agent against Alzheimer's disease. The cognitive impairment was produced by various methods like ethanol-induced cognitive impairment and diazepam induced amnesia. The potentials of the extracts were determined by using Morris water maze (MWM) test. Both the extracts showed significant learning and memory enhancement activity.

Keywords: Alzheimer's disease, *Securinega leucopyrus,* Ethanol, Diazepam, Morris water maze

INFLUENCE OF ADR ON HEALTH ECONOMICS: A REVIEW

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ABSTRACT

The prevalence of unwanted side effects leads to unnecessary hospitalization which could be prevented and the patient has to bear a huge burden by paying these additional cost. To list and analyze, the cost incurred for the treatment of ADR's at three different set up (US, Germany, India). Pubmed database was searched with keywords "ADR Prevalence" and "Cost for treatment of ADR", "ADR that are preventable" and "Economic impact of ADR". Totally 66 studies were screened and more number of ADR were for cancer medications, followed by DMARD. The cost of treatment for each ADR was found to be 2000 USD in an US set up, ¥298.43 in a Chinese set up, 2000 Euro in a European set up, and around 150 USD for an Indian set up. Out of the total ADR's that occurred, 60 percent of the ADR were preventable. The study reveals the fact that ADR are most common reasons for lengthy hospitalization and can make unnecessary economic load on the patients. Due care and training both patient and doctors may actually decrease the chances of ADR thus reducing the economic burden on patients. Out of all studies screened there was not a single study on the ADR of herbal medicines.

Keywords: ADR Prevalence, Health economics, Herbal medicines

MORPHOLOGICAL, BIOCHEMICAL AND MOLECULAR CHARACTERISATION OF GN COT-25 (*GOSSYPIUM HERBACEUM* L) UNDER SALT STRESS

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ABSTRACT

The aim of this study was to evaluate the effect of different concentration of NaCl (50 mmol, 100 mmol, 150 mmol and 200 mmol) along with the control of GN. Cot-25. Salinity is one of the major abiotic stress that adversely affect crop varieties and productivity and salinization is predicted to result in loss of 50% of farmable land globally by 2050. Salinity is the most serious growth limiting factor and evolution of crop varieties suitable to salt stress situations, therefore, no longer be ignored. Therefore, this study aimed to investigate the effect of salt on morphological and biochemical parameters; also detect possible DNA changes induced by salt using the RAPD profiles of Control, 50, 100, 150, and 200 mmol exposed seedlings of GN. Cot-25. Our study obtained herein indicates that RAPD marker suited up potential molecular markers for salinity tolerance screening in GN. Cot-25.

Keywords: Cotton, Salt stress, Morphological and biochemical parameters, Rapd profiles

ANTIOXIDANT ANALYSIS OF DIFFERENT PARTS OF RAW *CARICA PAPAYA*

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ABSTRACT

Over centuries, papaya (*Carica papaya* Linn.) belonging to Caricaceae family is a renowned nutritious and medicinal plant. Each and every part of the papaya has its own nutraceutical properties. This study sought to examine the total phenolic content (TPC) and total flavonoid content (TFC) from different parts of raw papaya such as peel, seed, pulp and leaves. 1,1-Diphenyl-2-Picryl-Hydrazyl (DPPH) free radical scavenging assay was performed to evaluate the antioxidant potential of the samples and was correlated with total phenolic and flavonoid contents of samples. The total phenolics were expressed as mg/100g Gallic acid equivalent (mg GAE/100 gm) and the total flavonoids were expressed as mg/100g Quercetin equivalent (mg QE/100 gm). The total phenol and flavonoid content of the leaves were found to be maximum with positive correlation with DPPH radical scavenging assay. Therefore, the leaf extracts of *Carica papaya* demonstrated potent antioxidant activity and could be of immense value in the pharmaceutical and food industry.

Keywords: *Carica papaya*, Antioxidants, Phenolics, Flavonoids, DPPH, Pharmaceutical

GRAPHENE NANORIBBONS LOADED WITH SELECTIVE ESTROGEN RECEPTORS MODULATORS FOR TARGETING HUMAN BREAST CANCER CELLS

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ABSTRACT

Delivering selective estrogen receptor modulators (SERMs) to human breast cancer cells, wherein therapeutic drug levels maintainable over a period has become crucial. A folic acid conjugated graphene mediated drug delivery system is made by a synthesis of oxidized graphene nanoribbons (OGNRs) via longitudinal unzipping method. Subsequently non-covalent conjugation of folic acid (OGNRs-FA) and loading of SERMs was carried out into OGNRs. This enables controlled drug release targeting human breast cancer cells overexpressing folate receptors. Scanning electron microscopy (SEM) and transmission electron microscopy (TEM) images reveal an unzipped layer of OGNRs which is mostly uniform and straight with smooth edges and no edge roughness. Atomic force microscopy indicates the presence of a single layer of OGNRs. Conjugation and loading was done based on strong π-π interactions. Folic acid conjugation was confirmed by energy dispersive x-ray diffraction analysis. TEM micrographs of OGNRs-FA loaded SERMs show an aggregation of SERMs on the surface; particle size analysis reveals the size distribution in a range of 15–85 nm. *In vitro* release of OGNRs-FA loaded SERMs in various PBS showed pH dependency. Cytotoxicity screening of OGNRs-FA loaded SERMs was done using MTT assays in Michigan cancer foundation-7 and Sloan Keterring breast cancer cells which show dose dependent and time dependent effects; assessed and evaluated at different time points (24-72 h) and doses (25-400 µg). Thus overall OGNRs-FA loaded SERMs can be considered as a good carrier for delivering SERMs to human breast cancer cells.

Keywords: Fullerenes, Graphene nanoribbons, Cytotoxicity, Folic acid, Raloxifene hydrochloride

ARTIFICIALSWEETENERS: LEAVINGBEHINDBITEREFFECTONGUT MICROBIOTA

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ABSTRACT

Non-caloric artificial sweeteners (NAS) are synthetic substitutes for sugar and are among the most widely used food additives worldwide. To date six artificial sweeteners area pproved by the Food and Drug Administration (FDA), they are aspartame, saccharin, acesulfame-K, neotame, tagatose and sucralose. NAS don't contribute any calories to our diet because we can't digest them, so they have been widely used across the globe as an aid to weight gain and diabetes prevention. NAS consumption is considered safe and beneficial owing to their low caloric content, yet supporting scientific data remains controversial. Consumption of NAS formulations cause glucose intolerance through induction of compositional and functional alterations to the intestinal microbiota. Epidemiological data have demonstrated an association between artificial sweetener use and weight gain. However, recent animal studies draw information that supports an active metabolic role of artificial sweeteners. Systematic review examines the current literature on artificial sweetener consumption in children and its health effects.

Keywords: Non-caloric artificial sweeteners, Weight gain, Weight gain, Diabetes

ANTIBIOTICS AND GUT MICROBIOTA

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ABSTRACT

Antibiotics have been used effectively as a means to treat bacterial infections in humans and animals for over half a century. However, through their use, lasting alterations are made to mutualistic relationship that has taken centuries to evolve: the relationship between the host and its microbiota. Host microbiota interactions are dynamic; therefore, changes in the microbiota as a consequence of antibiotic treatment can result in the dysregulation of host immune homeostasis an increase susceptibility to increase. Eg: increase susceptibility to asthma due to suppression of lactobacilli and overgrowth of *C. difficile* by cephalosporins used in treatment of asthma. A beter understanding of both the changes in the microbiota as a result of antibiotic treatment and the consequential changes in the host immune homeostasis is important, so as that these effects can be relieved.

Keywords: Antibiotics, Gut microbiota*, C. difficile,* Cephalosporins, Asthama

AN INSIGHT IN TO THE IMMUNOLOGICAL CHECK POINT INHIBITORS IN CANCER

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ABSTRACT

Immunotherapy has been evolving ever since it's finding and has become an important tool in the treatment of certain types of cancer. Numbers of approaches have come up in the recent years for the treatment of cancer, the novel one being the blockade of immune check points like PD¬-1, PDL-1/2 and CTLA-4. T cells have proteins which turn the immune system on when needed and other proteins which turn them off when no longer needed. Cancer cells can trick the immune system by turning the Tcells off there by preventing them from attacking the cancer cells. Blockade of these check points prevent the suppression of T-cels. The drugs approved by the USFDA are Nivolumab(2014), aPD-1Blockerandipilimumab(2011),a CTLA-4blocker. These drugs are used incombination as a firstline treatment option for inoperable ormetastatic melanoma. Atezolizumab (2016), which is a PDL-1 blocker is used in the treatment of non-small cell lung cancer. The other PDL-1 inhibitors are Avelumab and Durvalumab. Today the ultimate goal of cancer therapy is effectively destroying tumour cells without eliciting harmful effects in normalcels. Thus immunotherapy can be an important future tool.

Keywords: Immunotherapy, Immune check points, Cancer cells

OPTIMIZATION OF CLINICAL TRIALS USING BANDIT ALGORITHM

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ABSTRACT

The current gold standard design for clinical trials is known as Randomized Clinical Trials (RCT). After the assessment of eligibility and patient recruitment, patients are allocated randomly to the treatments. Randomisation minimises allocation by balancing both known and unknown prognostic factors in the assignment of treatments. The use of RCT lead to the use of the scientific method in the Medical Research and had a significant impact in the knowledge of the incidence and causes of diseases. Lengthy and expensive trials, high rates of drug failures and increased safety concerns. Average cost of developing a new drug by 2017 was estimated $2.7 Billion, pressure to shorten trials, reduce the number of required patients and produce *conclusive* results. In RCT, patient allocation is randomised but fixed during the trial (main goal is the learning by the end of the trial). Adaptive design allowed to change patient allocation data is gathered. If used properly, it provides efficiency gains (the smallest sample size and increase chance of correctly answering the clinical questions of interest etc.). Factors, determining the statistical properties of a particular adaptive design require careful consideration to avoid biased studies. The Multi-Arm Bandit approach "learn and exploits", sensible approaches for clinical trials on rare diseases.

Keywords: Clinical trials, Disease, Bandit algorithm

DESIGN AND DEVELOPMENT OF NOVEL DOSAGE FORM FOR MALNUTRITION MANAGEMENT

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ABSTRACT

Conventional therapies for anaemia face the grave issues of erratic absorption of iron due to lack of localization in upper gastrointestinal tract (GIT). Absorption site of iron is duodenum and proximal jejunum, Folic acid is mainly absorbed along the intestinal tract as well as colon. Colon specific tablet of Folic acid can be combined with the gastroretentive multiparticulate (GRMUPs) drug delivery system of Ferrous Ascorbate. This dual site specific delivery can lead to effective and tolerable management of Anaemia. The aim of the work was to formulate a gastroretentive multiparticulate drug delivery system of Ferrous Ascorbate combined with colon specific tablet of folic acid for specific sustained delivery. GRMUPs of Ferrous Ascorbate were prepared using extrusion spheronization technique. Combination of various grades of HPMC and Sodium Alginate were envisaged for the formulation of matrix GRMUPs. Factorial Design was applied to optimize floatation and lag time. The GRMUPs were evaluated for physical parameters, floatation time, lag time, drug content and *in vitro* drug release in simulated gastric fluid. For colon targeting of Folic Acid, tablets were seal coated with HPMC E50-Ethyl cellulose followed by colon targeting polymer Eudragit FS 30D. The concentration of coating polymer and weight gain was optimized based on drug release studies in simulated gastric fluid, intestinal and colon simulated fluid. The resulting combination of GRMUPs of Ferrous Ascorbate and colon targeting tablet of Folic Acid together in capsule can be helpful in management of Anaemia.

Keywords: Gastroretentive Multiparticulate system, Colon targeting, Ferrous ascorbate, Folic acid

SOLUBILITY ENHANCEMENT STUDIES OF POORLY SOLUBLE DRUG

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ABSTRACT

In recent years, considerable progress has been made toward understanding the biochemical mechanisms leading to diabetic neuropathy, and as a result, new treatment modalities are being explored. Aldose reductase inhibitors are a class of drugs being studied as a way to prevent diabetic neuropathy. Epalrestat is a carboxylic acid derivative and a noncompetitive and reversible aldose reductase inhibitor used for the treatment of diabetic neuropathy, which is one of the most common long-term complications in patients with diabetes mellitus. It reduces the accumulation of intracellular sorbitol which is believed to be the cause of diabetic neuropathy, retinopathy and nephropathy. Epalrestat is poorly water soluble drug belonging to BCS class II, hence this research project is aimed at enhancing the solubility of epalrestat to overcome the limitation of this drug's bioavailability. Solubility of epalrestat was enhanced by forming ternary inclusion complexes with hydroxy propyl beta cyclodextrin along with L-arginine. Ternary complex was prepared by physical mixture, kneading, co-evaporation and spray drying. Solubility of eparlestat was enhanced from 0.01 mg/ml to 0.92 mg/ml in distilled water. The ternary complex prepared by spray drying technique showed maximum solubility and release rate. The characterization studies of ternary complexes such as DSC, P-XRD, FTIR and NMR revealed that noticeable changes were observed in all characterization methods, indicating formation of new solid inclusion complexes.

Keywords: Diabetic neuropathy, Aldose reductase inhibitor, Epalrestat, Inclusion complex

BIOMIMETIC SYNTHESIS OF SILVER NANOPARTICLES USING *GLYCYRRHIZA GLABRA* EXTRACT: EVALUATION OF PROCESS VARIABLES AND THEIR CHARACTERIZATION

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ABSTRACT

Silver nanoparticles, clusters of silver atoms that range in diameter from 1-100 nm, are an arch product from the field of nanotechnology which has gained boundless interests because of their unique properties such as chemical stability, good conductivity, catalytic and most important antibacterial, anti-viral in addition to anti-inflammatory activities. *Glycyrrhiza glabra* Linn. is a herb belonging to family Leguminoceae, possessing different pharmacological activities like antibacterial, antioxidant, antimalarial, anti-inflammatory etc. owing to the triterpene saponins, glycosides, flavonoids and various other phytoconstituents present. Present study was aimed at synthesizing silver nanoparticles using aqueous extract of *G. glabra* Linn. The study involved evaluation of the effect of process variables like reductant concentrations, interaction time, reaction pH (3, 5, 9 and 11), reaction temperature (10 °C, RT and 50 °C) and mixing ratio of the reactants on the synthesis process and size of nanoparticles. Characterization of the synthesized nanoparticles was done using UV-Vis spectroscopy, FT-IR, SEM, TEM, EDX, XRD, Photomicroscopy and Fluorescence analysis. The synthesized nanoparticles were also evaluated for antimicrobial, antiparasitic and anticancer activities on cell lines. The results confirm formation of silver nanoparticles with an average particle size of 15.95 nm. The results reveal that the size of nanoparticles produced through bioreduction is strongly dependent on the above process parameters. It is concluded that biosynthesis of nanoparticles using plant extracts as the reducing and stabilizing agent is simple, relatively reproducible, cost effective technique which results in more stable materials than the physicochemical methods of production involving hazardous chemicals.

Keywords: Nanotechnology, Silver nanoparticles, Biosynthesis, Process variables, *Glycyrrhiza Glabra* Linn

DESIGN AND DEVELOPMENT OF NOVEL ORAL FORMULATION FOR TREATMENT OF MOUTH ULCERS

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ABSTRACT

Mouth ulcers also known as canker sores occurs as breakdown in the mucus membrane of the oral cavity with loss of surface tissue, disintegration and necrosis of epithelial tissue. Benzydamine hydrochloride is a locally-acting non-steroidal anti-inflammatory drug with local anesthetic and analgesic properties used widely for treatment of inflammatory conditions of the mouth and throat. Currently available formulations of the drug such as gels and sprays are poorly retained onto the buccal mucosa for longer period of time. The aim of the present work was to develop stable mucoadhesive films of benzydamine hydrochloride which shall resolve the problem by adhering to the mucus membrane and delivering the drug directly into the upper layer of mucosa. Films with various mucoadhesive polymers were formulated by solvent casting method and evaluated for clarity and peelability. The optimized film was then evaluated for appearance, thickness, folding endurance, surface pH, drug content, swelling index, bio-adhesive strength, *in vitro* diffusion, ex-vivo diffusion, FTIR, Differential scanning calorimetry and Scanning electron microscopy analysis. Antifungal studies using fungal strains *Candida albicans* and stability studies were carried out as per ICH guideline Q1AR2. The optimized film exhibited good physical characteristics, *in vitro* drug diffusion studies showed that 80% of the drug diffused within 30 min whereas the conventional gel showed 20% drug diffusion in an hour. Formulated and optimized mucoadhesive film showed faster release of the medicament as compared to conventional formulation with improved antifungal activity, thus the oral thin films can act as novel dosage form in the treatment of mouth ulcers.

Keywords: Mouth ulcers, Canker sores, Benzydamine hydrochloride

DEVELOPMENT, CHARACTERIZATION AND EVALUATION OF LIGAND CONJUGATED MAGNETIC SOLID LIPID NANOPARTICLES FOR THERANOSTIC APPLICATION IN COLORECTAL CANCER

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ABSTRACT

5-Fluorouracil (5-FU) loaded folic acid conjugated Magnetic Solid Lipid Nanoparticles (MSLNs) was developed and characterized for theranostic application in colorectal cancer. Iron oxide nanoparticles were prepared by chemical co-precipitation method and 5-FU loaded MSLNs were prepared by emulsification-solvent diffusion method. Different formulation parameters; including drug: lipid ratio was studied with respect to particle size and drug entrapment efficiency. Folic acid was coupled on the surface of MSLNs. The prepared MNP and MSLNs were characterized for shape and surface morphology, percentage entrapment efciency and drug release studies. Results showed that formula 8 (F8) with composition of 20% 5-FU, 27% Dynasan 114, and 53% soyalithicin was considered the optimum formulae as they combined small particle sizes and relatively high encapsulation efficiencies. F8 had a particle size of 189.5 nm±8.35 and an encapsulation efficiency of 81±3.65%. A burst release with magnitudes of 26% cumulative drug released was noticed in the first hour samples incubated in phosphate buffer pH 6.8 for F8, followed by a slow release profile reaching 50% after 48 h. These MNSPs resulted in the superior uptake of drug and magnetic nanoparticles by cancer cells. Upon magnetic hyperthermia, we could harness the advantages of incorporating magnetic nanoparticles that synergistically acted with the drug to destroy cancer cells within a very short period. The remarkable multimodal efficacy attained by this therapeutic nanoformulation offers the potential for targeting, imaging, and treatment of cancer within a short period of time.

Keywords: 5-fluorouracil, Folic acid, Magnetic solid lipid nanoparticles

PREPARATION AND CHARACTERIZATION OF PLGA LOADED NEEM NANOPARTICLE AND DRUG LOADED WAFERS

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ABSTRACT

The objective of this study was to develop a topical drug delivery wafer. The polymeric vehicle used in this study combined chitosan and sodium alginate with PLGA loaded neem nanoparticle as a model drug. The wafers were obtained by freeze-drying gels of the polymers in well plates. Prior to the lyophilisation process, differential scanning calorimetry was performed to establish a suitable freeze-drying cycle. Preliminary characterization experiments were undertaken to select the optimum composite gel containing sodium alginate and chitosan in a 6:1 ratio respectively for drug loading. The formulations were functionally characterised for swelling capacity, mucoadhesive, hardness test and drug dissolution properties. The morphology and crystallinity were investigated using a scanning electron microscope and X-ray diffractometer respectively. These results show the feasibility of developing a sustained delivery system by combining chitosan and sodium alginate.

Keywords: Topical drug delivery wafer, PLGA Loaded Neem, Nanoparticle

PREPARATION AND CHARACTERIZATION OF MICROCRYSTALS OF CARVEDILOL

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ABSTRACT

Carvedilol an antihypertensive drug exhibit poor solubility and dissolution rate. Hence an attempt has been made to prepare the micro-crystals of carvedilol to increase the solubility and dissolution rate by solvent change method in the presence of stabilizers such as PVP-K30, PEG-4000 and Pluronic-127. The prepared microcrystals were evaluated forparticle size, solubility and dissolution rate. Also the microcrystals were characterized by scanning electronic microscopy, FT-Infrared spectroscopy, Differential scanning calorimetry and x-ray diffractometry. The microcrystal showed decrease in particle size and stabilized in the presence of all hydrophilic polymers. The solubility and dissolution rate of microcrystals were markedly improved in the presence of polymers compared to untreated carvedilol. SEM showed the decrease in particle size as well as smooth surface crystals than that of platy crystals of untreated cravedilol. The FT-IR spectroscopy does not showed any interaction between the polymers used. DSC data showed the change in the melting point of microcrystals. XRD spectra showed the decreased in the crystallanity of microcrystals indicate the amorphous nature of microcrystals. These could be helpful to improve the solubility and dissolution rate of carvedilol.

Keywords: Carvedilol, Antihypertensive drug, Microcrystals

ISONIAZID INDUCED SYSTEMIC LUPUS ERYTHEMATOUS–A CASE REPORT

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ABSTRACT

Systemic lupus erythematosus (SLE) has been known to occur due to many medications like hydralazine, procainamide, isoniazid, methyldopa, chlorpromazine, quinidine and minocycline. Patient developed SLE after few days of starting the antituberculosis therapy. Patient was admitted with the complain of fever with chills and rigor. After being diagnosed as a case of tuberculous meningitis, patient was given antituberculosis therapy. As patient was not improving after few days of starting the therapy, on detailed investigations she was detected to have elevated levels of antinuclear antibody. Consulting physician suspected the drug isoniazid as the causative agent and advised to stop isoniazid from antituberculosis therapy. After withdrawal of the isoniazid drug, patient improved and discharged. As per WHO-UMC and Naranjo's causality assessment criteria, the association between reaction and tablet isoniazid was possible and probable, respectively. The reaction was moderately (Level 4b) severe as per Modified Hartwig and Siegel's scale. As there is increased risk of developing SLE with isoniazid, it was suspected as the culprit drug.

Keywords: Sysemic lupus erythematous, Isoniazid, Antinuclear antibody

COMPARATIVE STUDY OF EFFICACY OF FLUTICASONE ALONE AND FLUTICASONE WITH AZELASTINE NASAL SPRAY IN ALLERGIC RHINITIS

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ABSTRACT

Allergic rhinitis is an inflammation of the nasal membrane-characterized by nasal itching, sneezing, rhinorrhea and nasal congestion. Its an IgE mediated immunological response of nasal mucosa. Around 20–30 % of the Indian population suffer from allergic rhinitis, and among them 15 % develop asthma. Reported incidence of allergic rhinitis in India ranges between 20%-30%. Studies have shown that prevalence of allergic rhinitis has been increasing in India over past few years. Objective was to assess the efficacy of Fluticasone alone and with combination of Fluticasone+Azelastine nasal spray in patients with Allergic rhinitis and also to assess the quality of life of the patients treated. Source of data was patients attending ENT OPD, HIMS Teaching Hospital, Hassan. A total of 60patients were alternatively assigned into two groups of 30 each, given either Fluticasone or Fluticasone+Azelastine nasal spray respectively-followed at 2 w. Assessment of improvement was done using Total Nasal Symptom Score and Quality of life assessed using Rhinoconjunctivitis Quality of Life Questionnaire at baseline and at 2 w. Statistically significant improvement was seen in both the groups when compared to baseline. But, among the two groups combination therapy showed better efficacy compared to fluticasone alone.

Keywords: Azelastine, Fluticasone, Nasal spray, Efficacy, Allergic rhinitis

IMPACT OF CLINICAL PHARMACIST IN MODULATION OF HEALTHCARE SYSTEM

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ABSTRACT

Incorporation of knowledge attitude and practise questionnaire for specific disease condition to evaluate the impact of clinical pharmacist in improvising healthcare outcome. A prospective observational study was conducted over a period of six months in the department of General medicine in-patient wards of M. M. Hospital, Mullana. A total of 200 patients with all age groups and either gender admitted to the department of general medicine with specific chronic illness like Type 2 diabetes mellitus, Hypertension, Chronic Obstructive Pulmonary Disease and Chronic Kidney Disease were enrolled in the study and were followed. Details on socio-demographics of the patients, evaluations parameters for specific chronic diseases like Type 2 diabetes mellitus, Hypertension, Chronic Obstructive Pulmonary Disease were collected from various sources and documented in pre-structured data collection form and KAP (Knowledge, attitude and practice) questionnaires to evaluate patient's understanding about the disease. The patient information leaflets were assessed and evaluated using Leaflet Information Evaluation Tool and Leaflet Readability Evaluation Tool. The patient education services were provided to the patients with specific chronic disease with the aim of improvement adherence and health outcome. A total of 200 patients were recruited for the study. Patient Information Leaflets (PIL's) were designed and distributed for better understanding of disease by the patient followed by KAP questionnaires to assess and evaluate the patient's knowledge, attitude and practice towards the disease. There were improved outcomes in patients which were assessed on the basis of evaluation parameters of the specific chronic disease. The study concludes that patient education can help the patient understand there diseased condition and make them understand the importance of medication adherence which contributes in improving the healthcare outcomes.

Keywords: Clinical pharmacist, Chronic disease, Patient information leaflets

FIXED DOSE COMBINATION: AN OVERVIEW OF THE ISSUES FACED

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ABSTRACT

Fixed dose drug combinations (FDCs) are combinations of two or more active drugs in a single dosage form. They have proven useful in the management of diseases like AIDS, TB and malaria. FDCs have advantages in reducing the pill burden as well as in reducing the adverse drug reaction of the drugs. The cost is also less than the individual drug. Despite the various benefits, there are still few problems faced which will be discussed. Some of the key issues are: (1)The unwanted side-effects, (2)Difference in pharmacokinetics of the constituent drugs has led to the problems of administration frequency of the combination drug, (3)There should be a proper rationale for combining the active moieties in the FDCs. Each active component must show the desired effect and various clinical trials are needed to prove the efficacy, (4) The license for the manufacture of FDCs is given by approval of Drugs Control General of India. Absence of efficient drug surveillance system has made the matter even worse. Good pharmacovigilance is required to assess the performance of drug in clinical practice. Proper education on drug information, training of medical personnel and keeping in mind the public health safety may prove to be the effective measures required in the country to stop irrational use of FDCs. Good Manufacturing Practice (GMP) should be provided for all sites manufacturing the finished products. A proper rationale for combining drugs in the proposed ratio with justification from various supporting publications should be provided before any FDCs are launched.

Keywords: Fixed dose combinations, Pharmacovigilance, Clinical practice

NANOEMULSION IMPREGNATED FILMS FOR THE TRANSDERMAL DELIVERY OF CYCLOBENZAPRINE

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ABSTRACT

Cyclobenzaprine (CBZ) a widely prescribed skeletal muscle relaxant shows poor oral bioavailability due to extensive first pass metabolism. Moreover it exhibits adverse effects particularly dizziness and drowsiness. Transdermal film of CBZ was formulated to overcome these drawbacks. The films were fabricated with HPMC and were impregnated with nanoemulsion of CBZ. A series of nanoemulsions were prepared using various oils and surfactants. Nanoemulsion formulation was optimized via mixture design of Statease software. The optimization was based on the particle size and PDI. The nanoemulsion had a particle size in the nano meter range with a narrow size distribution. The films were prepared by solvent casting method. The films were characterised for physico-mechanical properties, drug release and *ex vivo* permeation. *In vivo* study was carried on wistar rats to assess the pharmacokinetic profile of the transdermal film. Pharmacokinetic parameters were generated using GastroPlus software. The prepared films exhibited excellent physical properties and mechanical strength. *In vitro* release studies showed controlled release for a period of 24 h. The results of the *in vivo* studies showed increase in bioavailability of CBZ delivered via transdermal route compared to reported pharmacokinetics for a dose administered orally. The nanoemulsion based film could be considered promising for transdermal delivery of CBZ.

Keywords: Nanoemulsion, Transdermal, Films, Cyclobenzaprine, Skeletal muscle relaxant

AN ASSESSMENT TO EVALUATE THE AWARENESS OF KNOWLWDGE REGARDING FIXED DOSE COMBINATIONS (FDCS) AMONG RESIDENT DOCTORS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Medicines form an integral part of healthcare. Most of the treatment prescribed consists of either single or in combination with other drug, one drug for single ailment or multiple co morbid conditions. Sometimes, two or more drugs are combined in a fixed ratio into a single dosage form, which is termed as fixed dose combinations (FDCs). The FDCs are justified when they demonstrate advantages in terms of potentiating its therapeutic efficacy, reducing the incidence of adverse events related to the drug, better pharmacokinetic and pharmacodynamic advantages, and which provides better compliance by reducing the frequency of dosage and also providing treatment affordability. Irrational prescribing of fixed dose combination is a major health concern. To assess the awareness of knowledge regarding fixed dose combinations among resident doctors in a tertiary care hospital. A cross-sectional study was carried out among resident doctors of tertiary care teaching hospital. Resident doctors of all the three years were randomly included. Data was collected from the specialties of Dermatology, pediatrics, General medicine, Ophthalmology, surgery, ENT, Obstetrics and gynecology. The total sample was 80 postgraduate students; informed consent was obtained from the participants, and a pretested questionnaire was distributed to them. Most of them were unaware of the number of fixed dose combination drugs present in the World Health Organization Essential Medical List (EML). Only few of them were able to name at least a single banned fixed dose combination drug. Many of them were not aware of the advantages and disadvantages and rationality of using fixed dose combination drugs. Amoxicillin with clavulanic acid was the most common drug prescribed by resident doctors followed by ofloxacin with ornidazole, ibuprofen with paracetamol, and sulfamethoxazole with trimethoprim. Therefore it is necessary to spread the awareness of the knowledge regarding FDCs to prevent their misuse and providing cost benefit and more advantageous treatment to the patient.

Keywords: Fixed dose combination, Essential medical list, Pharmacodynamic, Pharmacokinetic

DEVELOPMENT AND EVALUATION OF NOVEL ANTI-INFLAMMATORY FORMULATION FOR ARTHRITIS

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ABSTRACT

Rheumatoid arthritis (RA) is a chronic and progressive inflammatory disorder, characterized by synovitis and severe joint destruction. The main aim of treatment is focused towards decreasing the inflammation along with minimization of joint destruction and finally improving the physical condition and quality of life. Management of the RA includes oral as well as parenteral administration of drugs like biologics, glucocorticoids, disease modifying anti-rheumatic drugs etc., however, they come with notable side effects and difficulties with their route of administration which pose a challenge. Curcumin and diclofenac diethylamine both have limited systemic use due to their poor bioavaibility and short half-life, therefore in this study topical formulation of curcumin and diclofenac diethylamine was developed. Curcumin brings about inhibition of arachidonic acid metabolism, enzyme like cyclooxygenase and lipooxygenasecytokines, and is also reported to have strong oxygen radical scavenging activity. When it is given in combination with diclofenac diethylamine which works as prostaglandin synthase enzyme inhibitor shows increase in anti-inflammatory activity. As a novel drug delivery approach, curcuminmicrosphereswere loaded in diclofenac diethylamine gel based formulation which will have prolonged activity at the site of action as well as better anti-inflammatory activity. In the present study, curcumin microspheres are prepared by O/W Emulsion solvent evaporation method using dichloromethane and n-propanol as solvent and Eudragit RL100 polymerwith PVA as emulsifying agent. *In vitro* diffusion studies of optimized formulation of microsphere incorporated gel showed prolonged anti-inflammatory activity at the site of action as compared to marketed formulation.

Keywords: Rheumatoid arthritis, Curcumin, Diclofenac diethylamine, Microspheres

DEVELOPMENT AND EVALUATION OF BIODEGRADABLE, ECO-FRIENDLY NATURAL MOSQUITO REPELLENT

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ABSTRACT

The objective of the present study was to develop an ecofriendly, biodegradable and safe mosquito repellant preparations. Based on the consumer market leadership in India, total three types of mosquito repellant formulations in the form of combustible coil, liquid vaporizer and topical creams were shortlisted. Selection of herbal ingredients to be used in formulations i.e. Cow dung, Breadfruit flower (*Artocarpus altilis*), Dill oil (*Anethum graveolens*), Lemongrass oil (*Cymbopogon citratus*), Citronella oil (*Cymbopogon nardus*), Eucalyptus oil (*Eucalyptus globulus*), Tulsi (*Ocimmum sanctum*), Neem (*Azadirachta indica*), Ajowan (*Trachyspermum ammi*) was done purely on its proven mosquito repellent potential. Prepared formulations were subjected for physical and organoleptic evaluation. As per the WHO guidelines, therapeutic/bio-efficacy assessment of optimized formulations was done against species of *Aedes aegypti* mosquitoes at Entomology facility of Ross Life science Pvt Ltd Pune, India. The combustible coil and liquid vaporizer were evaluated for its repellent as well as knockdown ability in Peet-Grady chamber. The cream was evaluated for its repellent activity based on hand in cage method. Based on the evaluation results, the present study confirmed that developed mosquito repellant formulations (combustible coil and liquid vaporizer) were effective and satisfactory in repelling and knockdown of mosquitoes. However, concentration of active content in cream need to revised for effective repellant action.

Keywords: Mosquito repellant, *Aedes aegypti,* Peety-grady chamber, Screened cage method, KT50, KT90

PHARMACOLOGICAL INVESTIGATIONS ASPARAGUS RACEMOSUSAND ITS MARKETED PREPARATIONSSARASWATARISHTA AND BRAHMI GHRIT

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ABSTRACT

In present study effect of dried roots of *Asparagus racemosus* (Shatavari) and its marketed preparations Saraswatarishta (Sandu PharmaceuticalsandShree Dhootpapeshwar Ltd) and Brahmighrit was compared for Learning and Memory. Aqueous extract of *Asparagus racemosus* was prepared by cold maceration. Pharmacological investigations of aqeous extracts of *Asparagus racemosus* and its marketed preparations Saraswatarishta and Brahmighrit was done using Elevated Plus Maze,Opto-Varimex, Auto-track System, Rotamex, Hot Plate Analgesiometer and Morris Water Maze. The activity was alsocompared with standard drugs likeDiazepam and Pentazocine for muscle coordination, antianxiety, Learning and Memory and analgesic activity respectively. The comparative studies indicate ghrit as better dosage over hydro-alcoholic Saraswatarishta. We therefore conclude that Ayurvedic processing brings about change in the therapeutic activity of herbs

Keywords: Anxiety, *Asparagus racemosus*, Saraswatarishta, Brahmighrit

EVALUATION OF ANXIOLYTIC EFFECT OF ALCOHOLIC EXTRACT OF CITRUS LIMON LEAVES ON OPEN FIELD TEST

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ABSTRACT

To evaluate anxiolytic activity of alcoholic extract of *Citrus limon* leaves onwistar rats. A total of 30 rats are grouped into 5 with 6 rats each. Group I (control) received distilled water. Group II (standard) Diazepam 2 mg/kg is given. Group III-50 mg/kg,group IV-100 mg/kg,group V-200 mg/kg of extract is given. Instrument used was open field test. Data analysed by one way ANOVA and Post hoc comparisons were performed byTukey-Kramer multiple comparison test. $P<0.05$ was considered significant. Alcoholic extract of *Citrus Limon* in dose of 100 mg/kg showed effective anxiolytic activity and was found to be similar to Diazepam. The present study suggests that *Citrus limon* may be developed as a potential anxiolytic agent.

Keywords: Anxiety, *Citrus limon*, Diazepam, Open field test

EVALUATION OF ANXIOLYTIC EFFECT OF AQUEOUS EXTRACT OF MORINGA OLEIFERA LEAF EXTRACT ON WISTAR RATS WITH ELEVATED PLUS MAZE AND OPEN FIELD EXPLORATION TEST

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ABSTRACT

Evaluation of anxiolytic effect aqueous extract of *Moringa oleifera* on wistar rats. A total of 24 rats are grouped into 4 with 6 rats each. Group I(control) received distilled water. Group II(standard)Diazepam 2 mg/kg is given. Group III-200 mg/kg, group IV-400 mg/kg, group of extract is given. Instruments used were open field exploration test and elevated plus maze. Data analyzed by one way ANOVA and Post hoc comparisions were performed by Tukey Kramer multiple comparision test. $P<0.05$ was considered significant. Aqueous extract of *Moringa oleifera* leaves in dose of 200 mg/kg showed effective anxiolytic activity and was found to be similar to Diazepam. The present study suggests that *Moringa oleifera* exhibited anxiolytic activity in both models at higher doses.

Keywords: Anxiety, *Moringa oleifera,* Diazepam, Elevated plus maze, Open field exploration test

REVIEW OF CURRENT TRENDS AND RECENT ADVANCES IN THERAPEUTIC DRUG MONITORING (TDM)

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ABSTRACT

Therapeutic drug monitoring (TDM) is a method to aid pharmacotherapy by measuring certain drugs at fixed interval of time to maintain its constant plasma and blood concentration. By combining the knowledge of pharmaceutics, pharmacokinetics and pharmacodynamics, TDM enables the assessment of safety and efficacy of a drug in variety of clinical settings. This is a systematic review of literature with the aim to evaluate the current trends and recent advances in TDM. The method employed for literature search included web search of articles in various international and national bibliographic indices. The websites used for the search include Google, PubMed, Medline etc.Routine monitoring of all drugs is not advocated. Only 15 to 20 drugs are currently being monitored. The drugs being monitored are antiepileptics, cardioactive drugs, antibiotics like aminoglycosides, psychotropics, cytotoxic and antiretroviral drugs. The goal of TDM is to use appropriate concentrations of medications, those with narrow therapeutic window or unpredictable plasma concentration, to optimize clinical outcomes. Nowadays it is also being routinely used in determining substances of abuse and its use in forensic science is now well established. Several analytical techniques are available ranging from immunoassays to HPLC. HPLC coupled with GS-MS is considered most versatile tool. None of these techniques can be said to be the best, however the choice of technique to be used depends upon the nature of the disease, technical considerations and economics involved. TDM has the potential to improve neuropsychopharmacotherapy, accelerate recovery and reduce cost of therapy.

Keywords: Therapeutic drug monitoring, Pharmaceutics, Pharmacokinetics, Pharmacodynamics

IN SILICO AND *IN VITRO*B-SECRETASE INHIBITORY ACTIVITY OF SOME NATURAL COMPOUNDS

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ABSTRACT

Alzheimer's disease is one of the most common type of dementia in elderly people of age group 60 y and above. ADwasconsidered a rare disorder but in recent yearsit is one of the devastating disorder in elderly community, and is characterized by loss of neuron and disturbed signal between cells in the brain. The major pathophysiological characters of AD are the accumulation of extracellular neuritic plaques and neurofibrillary tangles in brain specially located in the memory related areas. The neuritic plaques are composed of β-amyloid peptide with 40 to 42 residues, on hydrolysis of amyloid precursor protein (APP) by the β-secretase 1 (BACE-1). Inhibition of β-secretase is one of the most promising treatment for AD. In Ayurveda drugs like Ashwagandha and pepper are widely used inmemory related disorders. In the present work molecular modelling techniques such as extra precision docking of natural BACE-1 inhibition and *in vitro* β-secretase inhibition assay was done on withanolide and piperine. Both the natural marker compounds showed promising inhibitory activity and proved the potential in treating memory related disorders.

Keywords: Alzheimer's disease, Ayurveda, Molecular modelling and β-secretase inhibition, *Withanolide* and *piperine*

EVALUATION OF NUTRITIONAL, PHYTOCHEMICAL AND ANTIOXIDANT POTENTIAL OF DIFFERENT EXTRACTS OF *HYPTIS SUAVEOLENS*

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ABSTRACT

Hyptis suaveolens (L.) Poit., a member of the Lamiaceae family, is a very common weed plant in India. *H. suaveolens* is known for its high medicinal properties and also use in rural areas as culinary delight. The purpose of the current investigation is to evaluate the nutritional, phytochemical and antioxidant potential of cooked, fresh and dried leaf extracts of *H. suaveolens.* Starch and Lipid content was found to be higher in extracts of fresh leaves than that of the extracts of dried leaves and cooked leaves, while antioxidant properties, tannins, TPC (Total Phenol contend),TFC (Total flavonoids content), crude proteins and reducing sugar was found to be higher in the extracts of cooked and dried leaves than fresh leaves extract. These preliminary studies showed that *H. suaveolens* possess high nutritional and antioxidant potential which make it beneficial for human consumption.

Keywords: *H. Suaveolens,* TPC, TFC, Tannins, Antioxidant, Protein, Starch, Reducing sugar, Lipid

PREVALENCE OF ANEMIA AMONG PREGNANT WOMEN IN GUNTUR, ANDHRA PRADESH

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ABSTRACT

Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. It occurs at all stages of the life cycle, but is more prevalent in pregnant women. The anemic condition is often worsened by the presence of concomitant chronic diseases like malaria, tuberculosis, HIV and diabetes. The morbidity and mortality rate of such chronic conditions increases with untreated anemia. Current knowledge indicates that iron deficiency anemia in pregnancy is a risk factor for preterm delivery and subsequent low birth weight, and possibly for inferior neonatal health. Most cases of anemia are due to iron deficiency, which often work in combination with folate deficiency and/or vitamin B12 deficiency as well as with infections. The present study aimed to estimate the prevalence of anemia among pregnant women. Our study sample was consisting of 137 pregnant women. The blood samples were collected in EDTA (Ethylenediaminetetraacetic acid) tubes during the home visit by trained persons. Questionnaire was used for the data collection, at the time of blood samples collection. Hemoglobin (Hb), Hematocrit (Hct), Mean Corpuscular Volume (MCV), and red blood cell (RBC) count were determined. The total percentage of anemia recorded in pregnant women was 34.0%. The anemia percentage was recorded high (55.8%) in lower socioeconomic family pregnant women, than middle class (32.2%) and upper class (17%). The percentage of anemic pregnant women was also high (40%) in age group of 15-19 y.

Keywords: Anemia, Pregnant women, Iron deficiency anemia, Hemoglobin, Hematocrit, RBC Count, Iron supplements

STUDY OF ANTI DIABETIC POTENTIAL OF METHANOLIC EXTRACT OF SOLANUM VIRGINIUM

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ABSTRACT

Type II diabetes mellitus (T2DM) is a fast-growing epidemic affecting people globally. Furthermore, multiple complications are associated with T2DM. Lifestyle modifications along with pharmacotherapy and patient education are the mainstay of therapy for patients afflicted with T2DM. *Solanum virginium* is a multipurpose plant with multiple health benefits. The phytochemical screening of methanolic extract of whole plant material of *Solanum virginium* revealed the presence of bioactive compounds such as saponins, phenols, flavanoids, and diterpenes. The acute toxicity studies of the polyherbal formulation did not show any toxic symptoms in doses up to 2000 mg/kg over 14 d. The oral antidiabetic activity of the polyherbal formulation (100 and 200 mg/kg) was screened against streptozotocin (45 mg/kg; i. p.)+nicotinamide (110 mg/kg; i. p.) induced diabetes mellitus in rats. The investigational drug was administered for 14 consecutive days, and the effect of the methanolic extract on blood glucose levels was studied at regular intervals. At the end of the study, Blood samples were collected by retro-orbital puncture at 0, 7 and 14 d at the glucose levels were estimated by Glucometer. This results demonstrates the safety of extract and permits to allow their use.

Keywords: Type II diabetes mellitus, *Solanum virginium,* Methanolic extract, Glucose levels

HYDROALCOHOLIC EXTRACT OF *BIXAORELLANA*L. SHELLSEXERTED ANTIOXIDANT AND LIVER PROTECTIVE ACTIVITY IN RATS

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ABSTRACT

Medicinal herbs and traditional medicines have been used in our country since pre-Hispanic times and are significantly effective against a large variety of liver disorders. *Bixaorellana* is one of the herbal drugs used traditionally for fever, buccaltumors, antiseptic, antibacterial, and different types of hepatic ailments. To investigate the hepatoprotective activity of *Bixaorellana* L. (BO) shell extract against acute ethanol-induced hepatotoxicity in rats.

Liver toxicity was induced by oral administered of alcohol (40%) at a dose of 12 ml/kg at 2 h every day for eight consecutive days.50% ethanolic extract of *Bixaorellana*shells at a dose of 200 and 400 mg/kg was administered by oral route daily for 8 d for the assessment of hepatoprotective activity. The liver protective activity was assessed using various biochemical parameters (aspartate aminotransferase, alanine aminotransferase, alkaline phosphatise, Bilirubin, albumin, Cholesterol and lactate dehydrogenase) and anti-oxidant parameters (Lipid peroxidation, reduced glutathione, catalase, superoxide dismutase). The hepatoprotective potential of *BOEof shells* was further accomplished by the histopathological examinations. Obtained results demonstrated that the level of liver marker enzymes and antioxidant parameters were significantly altered by ethanol treatment. Treatment with *Bixaorellana*shell extractsignificantly ($P<0.01$-$P<0.001$) and dose-dependently prevented alcohol-induced increase in serum levels of hepatic enzymes and liver injury. In addition, BOE significantly normalized the activity of antioxidant enzymes, namely, lipid peroxidation ($P<0.01$ to $P<0.001$), superoxide dismutase ($P<0.05$ to $P<0.001$) and reduced glutathione ($P<0.05$ to $P<0.001$) in the liver tissue of ethanol treated groups. Histopathological study of the liver tissue showed that *Bixaorellana* extract attenuated the hepatocellular necrosis and led to reduction in inflammatory cells infiltration.

The study powerfully supportsthat the protective effect of *Bixaorellana*shell extract significantly attributes to the hepatoprotective activitycaused by alcohol toxicity as it reverses the altered liver marker enzymes back to normal. It also showed that the antioxidant effect contributes to its antihepatotoxic activity.

Keywords: Antioxidant, *bixaorellana*, Ethanol, Hepatotoxicity, Hepatocellular necrosis, Inflammation

PRELIMINARY PHYTOCHEMICAL SCREENING AND QUANTITATIVE ESTIMATION OF TOTAL FLAVONOIDS CONTENT OF *CORCHORUS OLITORIUS*

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ABSTRACT

The aim of this study was to screen the phytochemicals and total flavonoid content of different extracts of *Corchorus olitorius*. Phytochemical analyses indicated the presence of Carbohydrates, Saponins, Diterpins, flavonoids, phenolic compounds Proteins and Amino acids. The total flavonoid content of extracts were estimated by using UV Visible Spectrophotometer and expressed as quercetin equivalents (QE). The methanol extract of *Corchorus olitorius* showed the highest yield and total flavonoid content investigated. The total flavonoid contents of the chloroform, ethyl acetate, methanol, aqueous extracts of *Corchorus olitorius* in terms of quercetin equivalent were 0.505, 1.300, 2.050 and 1.785 mg/100 mg of extract powder respectively.

Keywords: *Corchorus olitorius*, Phytochemical screening, UV visible spectrophotometer, Total flavonoids, Quercetin equivalent

POTENTIAL OF VOICE AS BIOMARKER FOR EARLY DETECTION OF DISEASES

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ABSTRACT

Human Voice is a complex tone produced by vocal folds. It is produced by co-ordination of various body parts. The Brain, Heart, Liver and Lungs are major organs who contributes in production of voice by supplying impulses, blood and air. The other body parts like chest, abdomen will provide power by generating pressure in air stream while the supraglottic vocal tract, oral cavity, nasal cavity will act as a series of interconnected resonator and the tongue and lips can be used as an articulator. Human voice has multiple audio channels and each channel consist of 12 parameters starting from lips to the glottis. The main objective is to carry out acoustic analysis for screening various diseases. The proposed technology is potential methodology for detecting various diseases like Tuberculosis, Bronchitis, Parkinson Disease, Depression and many more by analyzing voice in different situations for extracting various parameters from recorded voice while reading predefined text or alphabets. The expressions of these organ on voice spectrum is specific to text spoken by subject. Depending upon phonetic signature, text to read is specifically divided into three categories, The Neck, The Chest and Abdomen and last is Limbs. So, for early detection of diseases and malfunctioning of organs, voice analysis can be done which will act as a biomarker.

Keywords: Human Voice, voice as biomarker, Phonetic signature

ALTERNATIVE TO ANIMAL STUDY: CURRENT STATUS AND FUTURE PERSPECTIVE

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ABSTRACT

Today in every discovery countless animals are blinded, cut open, poisoned, starved and drugged behind closed laboratory doors. In most of the studies inaccurate results are obtained. The use of alternative methods to animal testing are an integral part of 3`R concept (Refined, Reduced, Replaced) defined by Russell and Burch in 1959. The approaches include *in silico* methods, *in vitro* methods of physiochemical analysis, biological methods using bacteria or isolated cells, reconstructed enzyme system and reconstructed tissues. Emerging "omic" methods used in integrated approach further help to reduce animal use, while stem cells offer promising approaches to toxicological and pathophysiologic studies, along with organoleptic culture and bio artificial organs. The best way to use these methods is to integrate them in tiered testing strategies (ITS), which would give an insight into minimum use of animals in scientific experiments, in which animal are only used as last resort but there are other so many techniques developed which can reduces the use of animal in very small extend. E. g. synthetic membranes is used to demonstrate the effect of chemicals or topical treatments on skin, MRI is used to interrogate disease through human scans, EpiSkin and EpiDerm for irritation test.

Keywords: Toxicological, Irritation, OMIC

ELOQUENT WOUND HEALING ACTIVITY BY *GALINSOGA PARVIFLORA* LEAVES EXTRACT

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ABSTRACT

Wound healing is achieved through four coordinated and protruding episodes. In under damaged skin, epidermis and dermis form a protective barrier against external environment. When barrier is broken, a regulated sequence of biochemical events is set into motion to repair the damage. This process is divided into predictable phases likewise Haemostasis, Inflammatory, Proliferative and Remodelling. The complex process can be disrupted by local or systemic risk factors, resulting in delayed healing and progression to chronic wound. The physician plays a significant role in handling such situations. Strategies for effective wound healing include optimising local wound care. Ethanolic extract of leaves of *Galensoga parviflora* were evaluated for wound healing activity. The ethanolic extract of 10% w/w ointment exhibit equivalent wound healing activity as povidine iodide. Extract in the form of ointment is applied topically on excision; incision models in mice showed marked healing process as evidenced by increased rate of wound closure time. Histological analysis of tissue after 14-21 d from extract treated group showed increased, well organised bands of collagen, macrophage, fibroblast, blood vessels compared to control, which expresses eloquent wound healing activity by *Galinsoga parviflora* leaves extract.

Keywords: Remodelling, Haemostasis, Elouent

RECENT TENOR OF DRUG DELIVERYAND DISEASE MANAGEMENT IN THE CURRENT PERSPECTIVE

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ABSTRACT

Over the past few decades, the concept of personalized medicine has proved to play an important role in the healthcare sector. Personalized medicine transforms the current dosage forms according to the needs of the patient. Based on this latest survey we are now able to bring out the best treatment options for a particular individual leading to better therapeutic outcomes and decreased adverse effects. It also has the potential to identify the disease at an earlier stage. It links the diseased condition of a person to the basic genetic and molecular profile causing better understanding of the condition of the patient and to pick out better treatment options. This review is focusing on the past, present, and future panorama of personalized medicine and how the personalized-medicine approaches are used as customized drug delivery system as well as the regulatory aspects towards it. Personalized medicine has the potential to modify the way we recognize and manage our health problems in our day today life and has already proven to have a huge impact on patient care and on clinical research.

Keywords: Personalized, Regulatory and healthcare sector

PREDICTIVE ANALYSIS IN ELECTRONIC HEALTH RECORD (EHR)

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ABSTRACT

It's been under discussion for a while about introducing EHR in medical field's, but due to a very small acceptance rate of this technology by physicians,it has proven to be a risky gamble in the successful implementation of EHR. EHR uses data accumulated on the subjects health to determine tests required, health analysis and real time records to help the physician provide a more accurate and detailed analysis on the subject. Due to Health Information Technology for Economic and Clinical Health (HITECH) there has been an increase in the amount of data accumulated by EHR. The data has a great potential because of the large archive of information all across the globe but due to the random collection of data it has resulted in the development of an unstructured record which has resulted in difficulty in transactions. Even though there has been a large collection of data around the globe, the major issue has been making use of this data in a logical manner for purposeful implementation. This increased collection of data has reached such a point that EHR can be considered as big data. The EHR incorporates the use of linear regression, logistic regression, decisions tree, Support vector machine, KNN K-means, clustering and other supervised and unsupervised learning algorithms to make more accurate judgement, thus incorporating concepts of machine learning into big data.

Keywords: Electronic health record, Hi-Tech, Real time records, Big data analysis, Machine learning, Artificial intelligence

HERBS FOR THE MANAGEMENT OF OBESITY

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ABSTRACT

Obesity, a complex interplay between environmental and genetic factors and is associated with significant morbidity and mortality. Usage of herbs for the management of obesity in the recent times is attracting attention. Dietary fat is associated with well-known diseases like diabetes, hypertension and cardiovascular diseases. Certain long-term medications like use of insulin, sulfonylureas, thiazolidinediones, a typical antipsycotics, antidepressant, steroids, some anticonvulsants and some forms of hormonal contraception may also cause weight gain or changes in body composition. Weight management means lifestyle modification, behavioral therapy, pharmacotherapy and surgery. So, herbal drugs are a promising route to treat obesity as it is a disease. Many herbal plants like seeds of Pumpkin, Withania somnifera, Zingiber officinale, Dioscoreanipponica, Maludomestica, has constituents that are used to treat obesity.

Keywords: Obesity, Dietery factors, Weight management, Hormonal contraception

EVALUATION OF IMMUNOMODULATORY ACTIVITY ON DICHCLOROMETHANE LEAVES EXTRACT OF *SPINACIA OLERACIA*

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ABSTRACT

Spinacia oleracea (Chenopodiaceae) commonly known as Spinach. It is useful in diseases of blood and brain, asthma, leprosy, biliousness; causes "kapha" (Ayurveda). However, to prove its efficiency for the clinical utilization, more experimental data will be beneficial. The present study involved the investigation of immunomodulatory activities of dichloromethane extract of *Spinacia oleracea* leaves. The immunomodulatory effect was studied in delayed type hypersensitivity response using SRBCs, phagocytic reponse using carbon clearance assay and cyclophosphamide induced myelosuppression. The evaluation of immunomodulatory potential by oral administration of dichloromethane leave extract of *Spinacia oleracea* (100 mg/kg) evoked a significant increase in the hypersensitivity response, produced a significant increase in the phagocytic index and protection against cyclophosphamide induced myelosuppression indicating its effect on cell mediated immunity. The results obtained in this study indicate that the ichloromethane extract of *Spinacia oleracea* has a significant effect on both cell mediated and humoral immunity.

Keywords: Immunomodulation, Phagocytic reponse, Hypersensitivity, Carbon clearance assay

INSULIN PULMONARY DELIVERY

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ABSTRACT

The long-term benefits of providing intensive insulin therapy to control blood glucose levels have been demonstrated in patients with diabetes. A number of attempts have been made to develop new ways of delivering insulin which, without the need for subcutaneous injections, may help increase the adoption of insulin treatment by diabetes patients.

The most promising non-invasive route of insulin delivery is via the lung. The pulmonary route of administration offers several advantages. First, the lung has a large surface area for drug absorption, ranging from 100 to 140 m^2. In addition, the alveolar epithelium has permeability that allows for rapid absorption of solutes. Because the mucociliary clearance of the alveolar lung tissue is slower than that of the bronchiolar tissues, the alveoli provide a greater opportunity for the absorption of larger molecules (e.g., insulin). Researcher said that particle size should be between 1 and 3 micrometres in diameter for optimal deposition in the lung, and that dry powder formulation can deliver more active drug in a single inhalation than liquid aerosol formulations.

The pharmacodynamic effects of insulin formulations administered via the lung are comparable to, or even faster than, those of subcutaneous injected regular insulin or rapid-acting insulin analogues.

Keywords: Diabetes, Alveolar epithelium, Bronchiolar tissues, Insulin

LUNAR PLANTING: THE BEST LUNAR PHASE AND SIGN FOR INCREASED VIGOR

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ABSTRACT

Moon phase gardening is an idea as old as agriculture, popular in folklore and superstition, but there are scientific ideas to back it up. The Earth is in a large gravitational field, influenced by both the sun and moon. The tides are highest at the time of the new and the full moon, when sun and moon are lined up with earth. Just as the moon pulls the tides in the oceans, it also pulls upon the subtle bodies of water, causing moisture to rise in the earth, which encourages growth. The highest amount of moisture is in the soil at this time, and tests have proven that seeds will absorb the most water at the time of the full moon. Planting by the phases of the moon will keep in rhythm with the alternating gravitational pull. Moon phase gardening considers four phases or quarters lasting about seven days each. The first two quarters are during the waxing or increasing light, from the new moon and growing up to the full moon.

Keywords: Lunar planting, Moon phase gardening

FORMULATION AND CHARACTERIZATION OF ANTIMICROBIAL CHEWING GUM DELIVERY OF SOME HERBAL EXTRACTS FOR TREATMENT OF PERIODONTAL DISEASES

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ABSTRACT

Chewing gums are mobile novel drug delivery systems, with a potential for administering drugs either for local action or for systemic absorption via buccal route. An antimicrobial chewing gum delivery system of the methanolic extracts of *Beatea monosperma* (barks and twigs), *Cordia obliqua* (leaves and seeds) and *Cuminun cyminum* (seeds) against periodontal diseases caused by some oral pathogens, was designed and characterized on various parameters.

Keywords: Oral problems, Novel drug delivery system, Herbal chewing gum

ECOFRIENDLY VALIDATED SPECTROPHOTOMETRIC METHOD FOR THE ESTIMATION OF AMLODIPINE BESYLATE BY USING HYDROTROPIC SOLUBILIZATION METHOD

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ABSTRACT

Most accurate, highly robust and linear spectrophotometric methods were developed for determination of poorly water soluble amlodipine besylate using hydrotropic agents like ammonium acetate. Hydrotropy is a good choice for replacing organic solvents used for this kind of drugs to reduce the cost and hazards of the analytical method. Amlodipine Besylate shows maximum absorption at 362 nm in 0.5 M of the hydrotropic agents. Hydrotropic agents did not show any absorbance above 260 nm so there is no interferences. Beer's law was found to be obeyed in the concentration range of 5–25 ppm for the hydrotrope. Correlation coefficient was found to be 0.999 and % RSD found to be less than 2. The results were in a good agreement with those obtained with official pharmacopoeia method.

Keywords: Amlodipine besylate, Hydrotropy, Method validation

"LAZY EYE" AMBLYOPIA

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ABSTRACT

Amblyopia is the medical term used when the vision in one of the eyes is reduced because the eye and the brain are not working together properly. The eye itself looks normal, but it is not being used normally because the brain is favoring the other eye. This condition is also sometimes called lazy eye. It causes more visual loss in the less than 40 age group than all the injuries and diseases combined in this age group. Amblyopia is the eye condition noted by reduced vision not correctable by glasses or contact lenses and is not due to any eye disease. The brain, for some reason, does not fully acknowledge the images seen by the amblyopic eye. This almost always affects only one eye but may manifest with reduction of vision in both eyes.

Keywords: Amblyopia, Eye, Brain, Lazy eye

THERAPEUTIC POTENTIAL OF AN OLIGO ELEMENT

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ABSTRACT

Copper (Cu) is an essential trace element required in living beings. It is also known to be oligodynamic in nature and can destroy bacteria very effectively without posing any health hazard. It is the mineral that the human body needs to function optimally as the Copper along with amino acids, fatty acids as well as vitamins, is required for normal metabolic processes. The copper together with iron, enables the body to form red blood cells. It also helps to maintain healthy bones, blood vessels, nerves, immune function, and it contributes to the iron absorption. Sufficient copper in the diet may help in preventing diseases like osteoporosis and cardiovascular diseases. Many medical facilities are beginning to use copper and copper alloy surfaces for highly trafficked areas such as hand railings, tables, doorknobs and more. Due to its enormous advantages, copper is believed to be an auspicious metal since ancient time. In this study, an attempt has been made, to scientifically explore the health benefits of Copper.

Keywords: Trace element, Oligodynamic, Metabolic processes and health hazard

FORMULATION OF AN INTRATUMORAL INJECTION BY UTILIZING THE POLOXAMER BASED *IN SITU* INJECTABLE HYDROGEL

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ABSTRACT

The present study is based on the examination of the importance associated with poloxamer based thermo reversible *in situ* hydrogel systems for the delivery of PEGylated melphalan drug. The solubility of the melphalan was increased by the PEGylation study and the solubility was significantly increased significantly reduced the hemolytic effect due to the presence of the PEG chains thereof. Further, in order to achieve the local effect and enhanced permeation effect (EPR) the PEGylated conjugates were loaded in to the poloxamer 407 (P407) based thermoresponsive in situ gelling systems. To increase the mechanical strength of the gel further NaCl salt was added to the formulation to tightened the PEO chains and remarkably reduced the drug's initial burst from the delivery system as only 43 % of drug released during 2 h from MPX-CG hydrogel. Prepared hydrogels were administered to Wistar rats via subcutaneous and intramuscular routes, to confirm the depot formation. The drug was released in a controlled manner over a long duration of time in a controlled fashion.

Keywords: Poloxamer, NACL, Hydrogel, Thermoreversible, LCST

TEXT NECK SYNDROME

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ABSTRACT

Prolonged use of handheld devices with the neck in a flexed position is what causes "text neck," an overuse syndrome that triggers neck and shoulder pain. **Text Neck** is an overuse syndrome or a repetitive stress injury to the neck caused by holding your head in a forward and downward position for extended periods of time. When holding your head in this position, excessive amounts of tension are created in the deep muscles of your neck and across the shoulders causing both acute and chronic neck pain. Chronic headaches have also been linked to this condition. The increased prevalence of these pains is due to the increasing popularity and hours people spend on handheld devices such as smartphones, e-readers and tablets.

Keywords: Text neck, Shoulder pain, Syndrome

A REVIEW ON NEEDLE–FREE INJECTION TECHNOLOGY

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ABSTRACT

Needle free injection system are to introduce the various medicines into patients without piercing the skin with a conventional needle. Needle-free technology offers the many benefit of reducing patient concern about the use of needle. Needle free injection is the very effective injections a wide range of drugs and bioequivalent to syringe and needle. It results in less pain, and is strongly preferred by patients. Additional benefits include very fast injection compared with conventional needles and no needle disposal issues. Not only benefit of the pharmaceutical industry to the increasing product sales, it has the added potential to increase compliance with dosage regimens and improved outcomes. Today, they are a steadily developing technology that promises to make the administration of medicine more efficient and less painful. Even though oral route is the most preferred one, certain conditions necessitate the use of parenteral dosage form. But this route being invasive, is considered as non-patient compliant. Thus, there came a need for a more patient compliant system which led to the development of needleless injection technology. This work intends to throw light on the basic mechanisms by which this technology works, its applications and thereby also discusses the scope it has for the delivery of many new upcoming drugs.

Keywords: Needle free injection, Needle free technology, Drug administration and drug delivery system

RECENT ADVANCES IN BRAIN TARGETED DRUG DELIVERY SYSTEM: A REVIEW

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ABSTRACT

Drug delivery to the brain is always a challenging task for the formulation scientists because of low permeation due to presence of blood brain barrier (BBB) with tight junctions in the brain endothelial cells. Even though numerous traditional approaches such as prodrugs, disruption of blood brain barrier have shown some success to overcome these challenges, researchers are continuously working for alternatives for better delivery of drug to brain. Recent advances in nanotechnology offer an appropriate solution for the drug delivery problems associated with the brain targeted drug delivery. The present review describes various nanotechnology based formulations such as polymeric nanoparticles, solid lipid nanoparticles, liposomes, dendrimers, miscelles and nanoemulsions which have been widely used for the better delivery of the drugs across blood brain barrier. Furthermore, components of blood brain barrier, general transport mechanisms across BBB and possible mechanisms of enhanced transport of nanoformulations to the brain have been discussed in detail. Moreover several ligand based targeted systems for the active drug delivery to the brain have also been discussed.

Keywords: Nanotechnology, Brain, Targeted drug delivery

MOUTH DISSOLVING STRIPS: AN APROCH TO NOVEL DRUG DELIVERY SYSTEM

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ABSTRACT

Conventional dosage forms like tablets and capsules are now days facing the problems like dysphagia, resulting in the high incidence of non compliance and making the therapy ineffective. To obviate the problems associated with conventional dosage forms, mouth dissolving tablets have been developed having good hardness, dose uniformity, easy administration and serves as the first choice of dosage form for paediatrics, geriatrics and travelling patients. The MDTs were developed with an aim of having sufficient hardness, integrity and faster disintegration without water. fast, within a few seconds, and are true fast Keywords: loped with an Fast dissolving Tablets are disintegrating and/or dissolve rapidly in the saliva without the need for water. Some tablets are designed to dissolve in saliva remarkably dissolving tablets. Others contain agents to enhance the rate of tablet disintegration in the oral cavity, and are more appropriately termed fast disintegrating tablets, as they may take up to a min to completely disintegrate. This tablet format is designed to allow administration of an oral solid dose form in the absence water or fluid intake. Such tablets readily dissolve or disintegrate in the saliva generally within<60 seconds.

Keywords: Mouth dissolving tablet, Disintegration, Patented technologies, Marketed MDT

LIFESTYLE DISORDER AND ITS MANAGEMENT IN AYURVEDA

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ABSTRACT

An Important role of Ayurveda is to identify a person's ideal state of balance, determine where they are out of balance and we try to balance by pathy-apathya. Various diseases occur in our society by lifestyle change and modern lifestyle and lifestyle disorders can be prevented by pathyapathya in various lifestyle disorders. The concerned material has also been searched on the internet. Ahara (diet) and Vihara are very much emphasized in Ayurvedic system of medicine for the prevention as well as management of a wide range of disorders including dermatological disorders. Vihara includes different types of life style (dos and don'ts) as suggested in Ayurveda. It is well acknowledged that stress is a major factor in the pathogenesis of most of the dermatological disorders like psoriasis, atopic dermatitis etc. Therefore, the lifestyle modification having a holistic approach to promote psychosomatic health should be recommended. Ayurvedic lifestyle promotes physical, mental as well as social health and ultimately leads to symptomatic improvement and improvement in the quality of life and thus help in the prevention and management of dermatological disorders.

Keywords: Dermatological disorders, Ayurvedic lifestyle, Vihara, Psychosomatic health

VITAMIN-D DEFICIENCY AND CANCER: A GROWING RISK OF CANCER

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ABSTRACT

Vitamin-D is an fat soluble vitamin having complex system of pathways which includes precursors,active metabolism,enzyme and receptors. This complex system active several molecular pathways and mediates muiltitude of functions. furthermore vitamin-D modify immune function,cell proliferation,differentiation and apoptosis. The physiological functions of active vitamin-D (calcitriol) are related to, osteoporosis, calcium homeostasis, diabetes mellitus and malignancy. lack vitamin-D causes severe dysfunctions in body like increasing risk of rickets in children and osteomalacia in adults,cancer,autoimmune disease,type 1 and type 2 diabetes,hypertension and heart diseases. for prevention of malignancy and such type of disorder have certain mechanism through sunlight and foods (cereals,dairy products etc.). Generally vitamin-D made in skin through exposure of sunlight, but it is in biologically inactive form to activate this hydroxylation is required. First of all 25-hydroxyvitamin-D is form in liver then it convert into 1, 25-dihydroxyvitamin-D in kidney. It's an active form of vitamin-D which interacts with specific receptors and regulate the cellular growth and also influence the modulation of immune system to prevent the malignancy. So such type of discussion will going under this topic.

Keywords: Diabetes mellitus, Rickets, Malignancy, Immune system

ROLE OF CHEMISTRY IN AGRICULTURE

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ABSTRACT

The basic need of human being is food. It is the agriculture only which fulfils this need for the entire population of the world. Plants are called producers as they synthesize their own food using CO_2 from air and water from soil utilizing sunlight as source of energy by a process known as photosynthesis. The rest of the food chain consists of consumers only. The practice of producing crops and livestock from the natural resources of the earth is called Agriculture. Modern agriculture includes agronomy, horticulture, animal husbandry, dairying, soil chemistry, etc. Chemistry deals with compounds, both organic and inorganic, and agriculture deals with the production of organic products using both organic and inorganic inputs Thus Chemistry forms an integral part of agriculture from molecular to organ level. It plays a role from the basics of photosynthesis to the utilization of agricultural produce. The advancements in this practice is only because of active research carried out in chemistry and then its applications to cause the land to produce more abundantly and at the same time to protect it from deterioration and misuse.

Keywords: Chemistry, Agriculture, Photosynthesis

DENDRITIC CELL BASED DRUG DELIVERY IN CANCER THERAPY

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ABSTRACT

Innate Immunity is an Immune mechanisms that are used by the host to immediately defend itself. Comprises of barriers, complements, antimicrobial peptides, cytokines, macrophages, DCs, NK cells, PMNs. Dendritic cells are component of innate immune system. Their main function is to process antigen material and present it on the surface to T-cells, thus functioning as antigen-presenting cells. The principle objective of malignancy antibody procedures including dendritic cells is to invigorate tumour antigen-specific cytotoxic T lymphocytes that can perceive and dispense with growth cells in an antigen-specific way. Dendritic cell based immunotherapy can evoke versatile and natural antitumor insusceptibility in at any rate half all things considered. This activity, combined with the low event of immune related unfavourable occasions, challenges the idea that enlistment of malignancy insusceptibility by immunotherapy must come at the cost of autoimmunity, as has been recommended for different immunotherapies, for example, ipilumumab.

The benefit of using monoclonal antibodies for vaccination is that the antigen is optimally delivered to the antigen-presenting cells. This approach enables vaccine customization by targeting particular receptors expressed by specialized DC subsets to thereby induce the desired immune outcome.

Keywords: Monoclonal antibodies, Vaccination, Immunity

NATURAL REMEDIES IN TREATMENT OF PATIENTS WITH BIPOLAR DISORDER: A REVIEW

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ABSTRACT

Bipolar disorder is a common, severe and periodic mental illness characterized by one or more depressive episodes. This period or cycle of depression is also known as Mania or Hypomania and is serious lifelong struggle. It is a brain disorder that marked by extreme in mood swings, thinking, and changes in energy level. Individuals with the Bipolar can undergo through acute changes in emotions that are very different from their normal behavior and mood. Early recognition of bipolar disorder can improve outcomes. For confirmation of the disease, combinations of methods are used like Physical and mental health examination, and calming techniques. For improving patients mental condition therapy involves, screening for suicidal or homicidal ideation and substance abuse, emphasize medication adherence and identifying metabolic disorders of pharmacotherapy**.** Several Herbal treatments are known to treat this disease including medication, psychotherapy and mood stabilizers, such as Ginseng, Bacopa (Brahmi), Mulungu Bark, Mucuna Pruriens, Scutellaria (Skullcap), Saffron, Passiflora Incarnata (Passion Flower), Soyabean (roasted), and Walnut. In this review we outline some of the natural remedies which may be helpful for bipolar disorder.

Keywords: Pharmacotherapy, Psychotherapy, Mania, Hypomania, Suicidal ideation, Mood stabilizers, Omega 3

CURRENT INSIGHTS OF DRUG ABUSE AND RESEARCH IN NARCOTIC DRUGS AND PSYCHOTROPICS SUBSTANCES

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ABSTRACT

The illicit production, consumption and abuse of drugs is a major global challenge eating into the fabrics of society, fuelling divisions along ethnic and religious lines, violating values of human dignity, crime and creating psychological wrecks. These drugs may be used recreationally to purposefully alter one's consciousness (such as coffee, alcohol or cannabis), as chemical substances for spiritual purposes and also as medication (such as the use of narcotics in controlling pain, stimulants to treat narcolepsy and attention disorders, as well as anti-depressants and anti-psychotics for treating neurological and psychiatric illnesses). It is also suggested the usefulness of antipsychotics in mania, acute and transient psychosis, delusional disorders and agitation and violence. The prescribing rates continue to increase for early onset psychiatric disorders, potential risk for substance of abuse–psychiatric medication interactions may be enhanced. Researchers have evaluated the efficacy of antipsychotics in various conditions like effectiveness, usefulness, tolerability, side effects, metabolic syndrome, weight gain, prescription, cost in various combinations etc. Undesirable interactions between the drug of abuse and the psychotropic-medication(s) should be considered, with respect both to drugs of abuse interfering with the effectiveness of medications and to the increased risk for side effects of the medications or enhanced toxicity of the drug of abuse. It is important to inform the adolescent and their families of the potential risks involved in using substances of abuse, misuse of prescription medications, abuse of OTC medications and of mixing medications with ATOD (alcohol, tobacco and other drug).

Keywords: Narcotics, Drug abuse, Psychotropics, Insights

ANTI-ARTHRITIC ACTIVITY OF METHANOLIC EXTRACT AND VARIOUS FRACTIONS OF CENTELLA ASIATICA LEAVES: AN IN VITRO STUDY

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ABSTRACT

Arthritis is a sign of chronic inflammation. It is a chronic progressive disorder, rising over months or years and involving essentially the synovial joints of the body. *Centella asiatica (CA)* commonly known as 'Mandukparni' is used traditionally as rasanaya herb and claimed to posses anti-inflammatory, anticancer and antioxidant property. The aim of our study was to evaluate the *in vitro* anti-arthritic activity of methanolic extract and their fractions. The anti-arthritic activity was evaluated by protein denaturation method and proteinase inhibitory activity. In protein denaturation method, the percentage inhibition for methanolic extract was found to be 40.22%. The petroleum ether and n-butanolic fraction of methanolic extract were shown 54.12 and 44.42% inhibition respectively. Similarly, in proteinase inhibitory activity, methanolic extract showed 42.65% inhibition and petroleum ether and n-butanolic fraction of methanolic extract were shown 52.26 and 43.44 % inhibition respectively at 500 µg/ml. The Diclofenac sodium was used as a standard drug in both models and shown greater activity as compared to petroleum ether and n-butanolic fraction. In conclusion, we found that TGF showed best activity in protein denaturation model as compared to proteinase inhibitory method.

Keywords: Arthritis, *Centella asiatica,* Anti-arthritic activity

COMPARATIVE EVALUATION OF BUTEA MONOSPERMA (FLOWER) AND BOERHAAVIA DIFFUSA (ROOT) EXTRACTS IN FREUND'S COMPLETE ADJUVANT INDUCED ARTHRITIS IN RATS

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ABSTRACT

The present study was carried out to evaluate anti-arthritic potential of flower extracts of *Butea monosperma* and root extracts *Boerhaavia diffusa* in Complete Freund's Adjuvant (CFA)-induced arthritis in rats. The roots and flower were extracted by using methanol as solvent by soxhlet apparatus for 72 H. Preliminary phytochemical screening was performed for the presence of various phytoconstituents i.e. alkaloids, fatty acids, terpenoids, steroids, flavonoids and glycosides etc. The anti-arthritic activity of methanolic extract was evaluated by adjuvant-induced arthritis at the dose of 200 and 400 mg/kg body weight and the standard drug used was prednisolone in 10 mg/kg. Different biochemical parameters i.e. RBC, WBC, hemoglobin and ESR were measured at the end of the study. The extracts administered in higher doses reduced the lesions to a greater extent showing a dose-dependent decline in lesions comparable with standard drug prednisolone. The extracts of *Butea monosperma* and *Boerhaavia diffusa* showed significant augment in body weight as compared to arthritic control group. The extracts of *Butea monosperma* and *Boerhaavia diffusa* showed significant decrease ($P<0.01$) in WBC count, ESR, increase in hemoglobin contents, and RBC count as compared to control group. In conclusion, at 400 mg/kg body weight *Butea monosperma* and *Boerhaavia diffusa* extracts were highly efficient in preventing and suppressing the expansion of adjuvant-induced arthritis.

Keywords: Anti-arthritic activity, Biochemical parameters, Prednisolone, *Butea Monosperma, Boerhaavia Diffusa*

NANOTECHNOLOGY: AN INNOVATIVE APPROACH AS NANOGELS

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ABSTRACT

Nanotechnology also known as "Nanotech" is the study of developing materials, devices or other structures possessing at least one dimension sized from1to100 nanometers. Nanotechnology may definitely a medical boom for diagnostic, treatments improve the sensitivity, selectivity, speed, cost and convenience of diagnosis. Such screening is required to identify illnesses, assess risk of disease onset or determine progression or improvement of disease state for diseases such as cancer, stroke, Alzheimers disease. Various types of nanotechnology based products like Nonotubes, Nanoroads, Nanogels, Nanomedicine, Nanoshell, Nanocapsules etc were well developed. One such approach is "Nanogels". The term "nanogels" usually defines aqueous dispersions of hydrogel particles formed by physically or chemically cross-linked polymer networks of nanoscale size, as multifunctional polymer-based drug delivery systems. The present review discusses the nanogel properties, synthesis, drug loading and characterizations techniques of nanogels.

Keywords: Nanogels, Nanotechnology, Nanomedicine

CLEANING VALIDATION FOR RESIDUAL AMOXICILLIN ON MANUFACTURING EQUIPMENT

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ABSTRACT

The purpose of the study is to assure that a cleaning process removes residues of the active pharmaceutical ingredient. The cleaning validation is been carried out to avoid the cross contamination and to inbuilt quality into the product. Three methods wrer employed in the cleaning process in the pharmaceuticals namely VISUAL CHECK, SWAB SAMPLING and RINSE SAMPLING. Cleaning of equipment used in manufacturing of amoxicilin was done as per suitable cleaning procedure and cleaning validation, rinse and swab samples were collected from the hot spots in equipment. These samples were analysed by the validated HPLC spectrometry method at 220 nm. Validation results proved that the amount of amoxicilin was within monograph specifications. The validated analytical mathod can be used for the analysis of amoxicilin. The cleaning procedure thus followed was able to limit the drug residues to a set acceptable level. From the results obtained it was concluded that the cleaning process was validated

Keywords: HPLC, Amoxicilin, validation

PROCESS VALIDATION AND CONTINUOUS IMPROVEMENT OF CO-AMOXICLAV POWDER FOR ORAL SUSPENSION

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ABSTRACT

In the present study process validation of amoxicillin oral suspension was carried out which is a Beta-lactum antibiotic used for treatment of number of bacterial infections. Process validation activity was carried out as per approved process validation protocol in order to validate the manufacturing process of Amoxicillin and Potassium Clavulanate Oral Suspension 228.5 mg/5 ml IP due to inclusion baffles in the existing blender (850 ml). The validation study was carried out under routine conditions to confirm reproducibility of the product. According to the protocol 3 batches data was considered for validation. Blended powder was sent to filling process only after analytical results. Based on the results of the validation data for three consecutive batches, it was concluded, as compared to the previous batches the percentage yield and uniformity has been increased without affecting the drug safety, quality and efficacy.

Keywords: Process validation, Amoxicillin, Potassium clavulanate

QUALITY RISK ASSESMENT AND MITIGATION PLAN TO THE CRITICAL MANUFACTURING PROCESS OF ANTI-DEPRESSANT TABLETS

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ABSTRACT

Quality should be inbuilt into the product, which means in each single steps' quality should be assured not just in the end. In pharmaceutical industry, as in most manufacturing process, the quality of final pharmaceutical products plays an important role to achieve safety and efficacy. Antidepressant tablet which is consider to be stable, robust quality and pharmaceutical equivalence to that of the reference product for the treatment of depression. In this study risk management has been performed along with the FMEA tool so has to monitor all the variable which are likely to affect the critical quality attributes. All the manufacturing in process variables during blending, compression and coating are monitored and reported.

Keywords: Risk management, Critical control parameters, FMEA, Quality attributes

QUALIFICATION OF AUTOCLAVE CUM BUNG PROCESSOR

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ABSTRACT

In accordance with GMP, each pharmaceutical company should identify what qualification work is required to prove that the critical aspects of their particular operation are controlled. The key elements of a qualification and validation programme of a company should be clearly defined and documented. Qualification is the integral part of GMP and there is no effective QA program without qualification. Now-a-days it is mandatory to incorporate qualification activity for any system in the manufacturing premises for all pharmaceutical industries. The purpose of this study is to initially develop the sterilization process parameter for the porous load articles then implement the sterilization process for the porous articles. The process development included qualification of equipment and the articles. The autoclave cum bung processor which is used for the cleaning and sterilizing rubber stoppers, garments and machine parts. Initially installation qualification was done followed by performing the qualification of the equipment by performing Vacuum leak test, Bowie dick test, heat distribution test and heat penetration test. The equipment passes all tests and hence the equipment is suitable for sterilization purpose as it meets the predetermined specification and quality attributes. Hence the autoclave cum bung processor is considered to be qualified.

Keywords: Validation of autoclave, Vacuum leak test, Bowie-dick test, Heat distribution test, Heat penetration test

QUALIFICATION OF ASEPTIC AREA FOR CLEAN ROOM

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ABSTRACT

The purpose of this study was to perform validation of an aseptic area located in a sterile product division (SPD), used for routine sterilization. The study was mainly focused on operational and performance qualification. Tests were carried out to check for effective sterilization. The aim of first test was air flow velocity at filter face test was measured to check the airflow velocity and uniformity. Air exchange rate test was performed to determine the supply airflow rate in a non-unidirectional clean room. Monitoring of differential pressure test was carried to verify the capability of the HVAC system to maintain the specified pressure differential between the installation and its surroundings. Installed filter leakage test were performed to confirm that the final high efficiency air filter was properly installed by verifying the absence of bypass leakage in the installation, Air flow visualization test was done to confirm either the airflow direction or airflow pattern or both in regard to the design and performance specifications, Temperature and humidity mapping tests was done to demonstrate the capability of the clean room air-handling system to maintain temperature and relative humidity(%) levels within the control limits over a specified time period, air borne particle count (NVPC) monitoring and microbiological monitoring test was done to classify and monitor the cleanliness of the environment with respect to the concentration of viable and non-viable particles, room recovery test was performed to determine whether the installation is capable of returning to a specified cleanliness level within a finite time. The results were found to be within the targeted limits and met the desired acceptance criteria. Therefore, it can be concluded that, the aseptic area was validated and ready for the use.

Keywords: Validation, Aseptic area, Aseptic processing, Performance qualification, Operational qualification

ANALYTICAL METHOD VALIDATION OF ANTI-RETRO VIRAL DRUG COMBINATION (300/300/50 mg)

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ABSTRACT

The newly developed analytical method for an anti-retro viral drug combination was validated for its assay and related substances. It was based on reverse phase liquid chromatography with gradient elution and UV detection. The analysis was performed on Zorbax SB-C 18, (100x 4.6) mm, 3.5µm column using phosphate buffer pH 4.6 and Trifluoro Acetic acid in acetonitrile as mobile phase at flow rate of 1.0 ml per minute. The eluents were monitored and detected with a UV detected at 260 nm. The proposed method for the analysis and related substances was validated as per the standard operating procedure. both the methods were validated with respect to system suitability, linearity, precision, accuracy, limit of detection (LOD), limit of quantification (LOQ), ruggedness, robustness and solution stability. The method was stability indicating and can be used for routine and stability sample analysis.

Keywords: Assay, Related substances, LOD, LOQ

DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR THE ESTIMATION OF FLUOXETINE IN CAPSULE DOSAGE FORM

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ABSTRACT

A simple, fast and precise reverse phase high profile liquid chromatography method (RP-HPLC) was developed for the estimation of Fluoxetine Hydrochloride in capsule dosage form. The chromatography separation was achieved on Nucleosil CN (250x4.6) mm: 5 µm column with an isocratic mixture of phosphate buffer (pH 4.7) adjusted with ortho-phosphoric acid: acetonitrile in the ratio 60:40 v/v, respectively. The mobile phase was kept at a flow rate of 1 ml/min with injection volume of 20 µl and wavelength of detection at 215 nm at room temperature. The retention time for fluoxetine hydrochloride was found to be 5.014±0.1 minute. The linearity was obtained in the range of 2.5-15 µg/ml for fluoxetine hydrochloride with correlation coefficient 0.9985. The proposal method was found to be linear, accurate, precise, stable, robust and specific and was successfully applied for the determination of investigated drug in pharmaceutical capsule dosage form.

Keywords: Fluoxetine hydrochloride, RP-HPLC

PROCESS VALIDATION OF ACECLOFENAC GRANULES (100 mg)

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ABSTRACT

The main aim of pharmaceutical industry today is to manufacture products of the right quantity at the lowest possible cost and to provide quality merchandise to the clients. Evaluation or validation of the manufacturing process is distinguished from those validation data which more properly fall under the remit of GMP inspection. The purpose of this study is to initially carry out process validation at all stages from initial development to production of Aceclofenac granules (100 mg). The granules thus produced were validated to assure that the critical parameters like dry mixing, granulation, drying and blending are within predetermined specifications meeting all quality attributes. During the study the critical process variables of Aceclofenac granules (100 mg) were validated to demonstrate the consistency of the manufacturing processes to produce the products of desired quality. The validation studies were conducted on three consecutive batches, which were intended for the use of commercial purposes of this validation study is concurrent type. All the in-process variables and finished product characteristics were monitored. Further from the results, it is inferred that the manufacturing processes of aceclofenac granules (100 mg) are valid.

Keywords: Critical process parameters, Concurrent validation, Aceclofenac granules

MODULATING DEFICIENCIES RELATED TO 'DRUG PRODUCT MANUFACTURING PROCESS AND CONTROLS" BY WAY OF BUILDING ANDA SUMMARY TEMPLATE AND CHECKPOINTS

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ABSTRACT

The aim of the study was to analyze the process related deficiencies to prepare an ANDA summary template and checkpoints for master document preparation. Queries from complete response (CR) and information request (IR) were taken and categorized. Then, process related queries were taken for further evaluation. Process related deficiencies were further subcategorized as In-process control, Process flow, Reconciliation, Manufacturing process and Hold time. These subcategorized deficiencies were evaluated by understanding point to point response. Checkpoints for master documents (BMR and PDR) and points of concern for 3.2. P.3 and 3.2. R were prepared. The prepared ANDA summary template and checkpoint for BMR and PDR were executed for 2 (capsule and tablet dosage form) ANDA. The template was used for the preparation of write-up. BMR and PDR checkpoints were verified for the submitted ANDA. PDR and BMR checkpoints will be checked for its effectiveness by implementing it from the developing stages. Expected to see a decreasing trend in process related deficiencies leading to faster approval of ANDA.

Keywords: Complete response (CR), Information request (IR), Abbreviated new drug application (ANDA)

FORMUALTION AND EVALUATION OF MUCOADHESIVE NANOPARTICLES OF REPAGLINIDE USING DESIGN OF EXPERIMENTATION

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ABSTRACT

pH sensitive mucoadhesive nanoparticles, based on ionic gelation technique was successfully optimized using 3^2 factorial design of experimentation to produce stable nanoparticles. The drug selected was anti diabetic drug repaglinide which has low oral bioavailability around 56% and a short half life of 1hr. Novel chitosan-sodium alginate nanoparticles of repaglinide have been designed and optimized for variables such as concentration of polymer i.e. chitosan and surfactant, using 3^2 factorial design. FTIR, DSC, SEM and XRD studies were used to characterize these nanoparticles. The prepared nanoparticles were evaluated for particle size, surface charge, percent drug entrapment, mucoadhesion, *in vitro* drug release and *in vivo* studies. Results showed that the optimized repaglinide nanoparticles can be utilized for improvement in its delivery.

Keywords: Mucoadhesive, Anti diabetic drug, Gastric mucus, Nanoparticles

DESIGN, FORMULATION AND EVALUATION OF POLY HERBAL GEL FOR TREATING MILD ACNE VULGARIS

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ABSTRACT

The present study is an attempt to formulate polyherbal gel formulations of Aloe Vera and *Garcinia mangostana* for the treatment of mild acne vulgaris using synthetic polymers like Carbopol 934NF, HPMC and PVA. The *Aloe vera* plant is popular and well known for its medicinal uses across the world. The most popularly known species of *Aloe vera* which is grown worldwide is *Aloe barbadensis* Miller. *Garcinia mangostana* is a proven herbal extract possessing anti bacterial, anti-inflammatory, antioxidant and antiallergenic properties. These formulations were prepared in concentrations of 1, 1.5, 2.0, 2.5 and 3.0% of respective polymers. These gels were further subjected to evaluation of properties like colour, clarity, pH, consistency, and viscosity measurements. The gels with different concentrations showed different colour range from light green to dark green. Odour was characteristic with all polymers. Consistency was slightly thick with increase in Carbopol 934 concentration. Spreadability was observed best in the get with HPMC 2.5%, while in others it was good and poor. Based on evaluation studies, it can be concluded that aqueous extract of *Garcinia mangostana* and *Aloe vera* can be formulated in an aqueous based gel system for topical therapy of mild acne vulgaris.

Keywords: *Aloe vera*, Spreadability, Viscosity, Polyherbal, *Garcinia mangostana*

DIGITAL HEALTH SOFTWARE PRECERTIFICATION PROGRAM

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ABSTRACT

The role of softwares in the Health care is predominant as it facilitates the life of the people in better and simpler way. Since Medical Softwares are regulated as Medical Device there is a need to ensure its safety and effectiveness before reaching the patients. The Software Precertification Pilot Program initiated by US FDA, will help to inform the development of a regulatory model to assess the safety and effectiveness of software technologies without inhibiting patient access to these technologies. The FDA envisions that the future regulatory model will provide more streamlined and efficient regulatory oversight of software-based medical devices developed by manufacturers. Since the manufacturers have demonstrated a robust culture of quality and organizational excellence, and who are committed to monitoring real-world performance of their products once they reach the U. S. market. This proposed approach aims to look first at the software developer and/or digital health technology developer, rather than primarily at the product, which is what FDA is currently doing for the traditional medical devices.

Keywords: Software, Pre Certification, Medical device and health Care

REGULATORY REQUIREMENTS FOR REGISTRATION AND APPROVAL OF GENERICS IN CHINA

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ABSTRACT

A generic drug is a pharmaceutical product, usually intended to be interchangeable with a new drug. Generic drug is comparable to brand/reference listed drug product in dosage form, strength, route of administration, quality and performance characteristics, and intended use. Generic drug Registration is a very strenuous and complicated process in many countries. In China, a Generic drug product must meet the standards, established by China Food and Drug Administration to be approved for marketing. China is restructuring or changing its regulatory frame work and its guidelines, which is difficult for domestic agencies and the other countries to file generic drug Product in China. This study provides an insight to generic drugs in China Regulatory authority. The regulatory requirements for registration and approval process for filing Generic Drugs in china are discussed. Chinese Pharmaceutical market is the second largest market after US; many large pharmaceutical companies have increased their presence in emerging markets in recent years. China is progressing towards generic product market from API supplier.

Keywords: Generics, CFDA, Regulatory requirements, Registration, Approval

IMPACT OF ELECTRONIC CIGARETTES ON TEENS

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ABSTRACT

E-cigarettes are classified as a type of Electronic Nicotine Delivery System (ENDS). This product deliver a liquid containing a mixture of nicotine, propylene glycol, glycerine and flavouring agents. E-cigarettes are used to quit smoking and are regulated by FDA under Family Smoking Prevention and Tobacco Control Unit. As the popularity of the electronic cigarettes (e-cigarettes) increased, it is more important to understand the characteristic of the e-cigarettes users, safety, misuse among teens or young, combinations methods used in e-cigarettes (along with hash oil), mentality of the e-cigarettes users among the teens, reason for the addiction or to start the usage of e-cigarettes. National Health Interview Survey in 2015 indicated 3.2 percent of adults who had never smoked cigarettes have opted to try e-cigarettes. That percentage was highest among users aged 18 to 24-years-old at 9.7 percent, and declined as age increased. The aim of this study is to know the misuse of e-cigarettes among young; and the alternatives for propylene glycol used in e-cigarette and ways to stop usage of e-cigarettes among young.

Keywords: E-cigarettes, Misuse, FDA Rules and regulations, Safety

REGULATORY CONSIDERATIONS FOR CONDUCTING CLINICAL TRIALS IN SPECIAL POPULATION

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ABSTRACT

A Clinical trial is a research study that explores whether a medical strategy, treatment, or device is safe and effective for humans. These studies differ for different groups and population based upon the requirements for conducting the trial. Special populations, including women (non-pregnant and pregnant), paediatrics, and the geriatrics (elderly), require additional considerations in conducting clinical trials. There are specific regulations to protect these subjects during clinical research. These groups may have unique benefit-risk considerations or they may need to use a different dose or treatment schedule. For including pregnant women in clinical trials, it is important to follow up on the pregnancy, the foetus and the child. Currently, progress is being made to be more inclusive of special populations in clinical trials. This review provides a clear view on how a study differs in special population and how it affects the study design and the regulatory considerations for conducting clinical trials in special population. Certain considerations like age, gender and diseased condition has to be noted in conducting clinical research in these population.

Keywords: Clinical trial**,** Special population**,** Paediatrics, Geriatrics, Pregnancy

NAVIGATION PATHWAY FOR BIOSIMILARS IN JAPAN: A REGULATORY VIEW

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ABSTRACT

In Japan, biosimilar products (also known as follow on biologics) are an upcoming trend as biosimilars are expected to be a vital component in reducing health care costs and enhancing patient access to lifesaving medications. The Regulatory authority for approval of biosimilars in Japan is the Pharmaceuticals and Medical Device Agency (PMDA). PMDA is responsible for drug regulation to ensure its quality, safety and efficacy. For gaining approval of biosimilars specifically in Japan, first one needs to understand the regulatory requirements for approval of biosimilars. Therefore, it is important to have knowledge about where the regulatory information is parked on the official website. "Navigation pathway" provides an efficient and time saving method to locate the desired information. It provides us with an understanding about their regulatory framework and moreover, help entrepreneurs who are developing a healthcare product. The main objective is to navigate Japan regulatory system with respect to gaining biosimilarapproval. Japan, like most ICH countries follows the ICH eCTD format for the submission of registration documents. The collected information is submitted through regulatory software and online portals to the regulatory authority for review. This study provides an overall view to locate guidance documents, application forms including quality accreditation such as GLP, GMP, GCP compliance and the documents required for obtaining these accreditations for submission to the regulatory agency and ultimately approval for market authorization.

Keywords: Biosimilars, PMDA, Navigation pathway, Regulatory framework

REGULATORY REQUIREMENTS FOR THE CONDUCT OF BIOEQUIVALENCE STUDIES IN US AND INDIA

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ABSTRACT

The generic drug company usually need not repeat the entire drug development process including clinical studies. They need to submit data including *in vitro* test (dissolution profile) and *in vivo* test (bioequivalence study or a clinical equivalence study) in their ANDA application. The objective is to measure and compare formulation performance between two or more pharmaceutically equivalent drug products. The aim of the study is to assure safety and efficacy of generic pharmaceutical product for human use. As per the Schedule Y, all the studies with a new drug will require prior approval from the DCGI (CDSCO). The Food and Drug Administration(FDA) in united states of America introduced the abbreviated new drug application(ANDA) Which is used for marketing approval of generic drug product. The ANDA is submitted to the Office of Generic Drugs (OGD) and upon filing acceptance the application is assigned for bioequivalence review, where the review process assesses the bioequivalence data comparing the generic product and the Reference Listed Drug (RLD). In order to reduce doubts and re-establishing the integrity of generics in market, Bioequivalence (BE) guidelines with stricter regulation should be the demand. The present study highlights the relevant regulatory requirement for the conduct of bioequivalence studies in US and India. There is a continuing attempt by national and international authorities to understand and develop more efficient and scientifically valid approach to assure bioequivalence study.

Keywords: Bioavailability, Bioequivalence, Generic drug, USFDA, CDSCO

REGULATORY CHALLENGES AND OPPORTUNITIES IN ANTIBIOTIC DRUG DEVELOPMENT

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ABSTRACT

Drug licensing is dynamic and is progressing due to technology. Previously, regulators prioritized the licensing of innovative drugs that fulfilled a high unmet medical need for a small number of patients, including orphan, cancer and HIV medicines. Regulators have recently agreed to include much-needed narrow-spectrum antibiotics, active against certain multi drug resistant (MDR) bacteria. Novel agents possessing a broad or narrow spectrum of activity against emerging MDR Gram-negative bacteria have proved very difficult to discover. The Generating Antibiotics Incentives Now (GAIN) act was approved by the US Congress in 2012, with the main incentive being that newly developed anti-bacterials will be designated as Qualified Infectious Disease Products (QIDPs), and the developing company will receive 5 y of market exclusivity after formal patent expiry. Both the EMA and the FDA are in the process of examining and redefining the regulations that govern the development of anti-bacterials. There is a balance to be achieved between supporting public health through the licensing of innovative medicines and safeguarding the public from harm. The background to why big pharmaceutical companies has largely deserted the antibacterial research arena, and the proposals that are hoped to reinvigorate their interest, are presented.

Keywords: Antimicrobial resistance, QIDP, Regulatory approval, Narrow spectrum, Antibiotics

USE OF MHEALTH SENSORS IN CLINICAL TRIALS

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ABSTRACT

Mobile Health is a growing sector of technology used in clinical practice. Nowadays pharma research institutes are already beginning to take advantage of mHealth technology to conduct clinical research. Purpose of using Smartphones with powerful processors and advanced sensors is to track movement, take measurements and record information that are highly useful in post-market studies and allow people to participate in studies more easily and efficiently. A study of Clinical Trial. Gov. registry was conducted to examine clinical trials involving mHealth application worldwide. 88% of included trials were initiated from 2012 to 2014, with only 20% of all included trials completed until 2015. Among 50 trials using mHealth applications majority of trials originated from USA and European countries. There was a broad distribution of the trials with regard to study focus and purpose, involving applications in behaviour change, treatment adherence, diagnosis, disease management and patient-reported outcomes. Most included trials were performed in the setting of chronic diseases. Use of mHealth applications is a growing field with broad implications and indications in clinical practice. mHealth applications have potential for future use in clinical trials and patient care and a promising method for enhancing patient engagement in medicine.

Keywords: mHealth sensors, Apps, Post-market study, Clinical trial

REGULATORY PATHWAY TO FILE THE NUTRACEUTICALS IN INDIA

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ABSTRACT

Nutraceuticals is a wide-ranging term that is used to define a food or food product that provide health and therapeutic assistances, including anticipation and management of the disease; such products may range from isolated nutrients, dietary supplements and diets to genetically engineered designer foods, herbal products and processed food. India has passed Food Safety and Standard Act 2006, a unified food law to serve as a single reference point in relation to regulation of food products including nutraceuticals with FSSAI as a regulating body. There is no unified regulation or guidance documents concerning nutraceuticals. The key objective is to understand the nutraceuticals regulations in India. Different countries have different registration procedure, this study provide an insight about the procedure for registration, licensing pathway, the import of Nutraceuticals in India and the market share of nutraceuticals globally. This study provide an insight about the schedule, forms, fees and other documents that are crucial for registration and licensing of nutraceuticals in India. Detailed process for import of nutraceuticals to India is described. Penalties for the offences that are made in case Nutraceuticals, the information regarding the labelling requirements and GMP for the premises are discussed. The purpose is to understand the impact of regulatory and quality requirements in the registration, licensing, import process of Nutraceuticals in India.

Keywords: Nutraceuticals, FSSAI, Licensing, Registration, Import and regulations

DRUG DEVELOPMENT FOR PEDIATRIC POPULATION: A REGULATORY PERSPECTIVE

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ABSTRACT

Pediatric aspects are nowadays integrated early in the development process of a new drug. The stronger enforcement to obtain pediatric information by the regulatory agencie in recent years resulted in an increased number of trials in children. Specific guidelines and requirements from, in particular, the European Medicines Agency (EMA) and the Food and Drug Administration (FDA) form the regulatory framework. This review was summarizes the regulatory requirements, strategies and role of Modeling and Simulation (MandS) in pediatric populations. It covers pediatric study planning and conducts, considerations for first dose in children, appropriate sampling strategies, and different methods for data generation and analysis to generate knowledge about the pharmacokinetics (PK) and pharmacodynamics (PD) of a drug in children.

Keywords: Pediatrics, Pediatric drug development, Pediatric legislation, Health authorities, Regulatory guidelines

SIMILARITIES AND DIFFERENCES OF FILING DMF IN REGULATED MARKETS

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ABSTRACT

A Drug master File (DMF) is a submission to a regulatory authority that may be used to provide confidential and detailed information on facilities, processes, or articles used in the manufacturing, processing, packaging, and storing of one or more human drugs. A DMF is submitted solely at the discretion of the holder, the submission in each country is different with their own formats and requirements for filling a DMF. The DMF Types, letter of access, submission requirements are same where as the format introduced by respective regulatory authorities in CTD, eCTD formats, and fees for marketing authorization are the notable differences. The information contained in the DMF may be used to support an Investigational New Drug Application (IND), a New Drug Application (NDA), an Abbreviated New Drug Application (ANDA), centralized procedure, or amendments and supplements to any of these. It is necessary to understand DMF filings by pharmaceutical industries give an indication of potential market both in terms of volume and value.

Keywords: DMF, CTD, Regulatory Requirements, Ammendments

REGULATORY CONSIDERATIONS IN THE DESIGN AND MANUFACTURING OF IMPLANTABLE 3D-PRINTED MEDICAL DEVICES

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ABSTRACT

Three-dimensional (3D) printing, or additive manufacturing, technology has rapidly penetrated the medical device industry over the past several years, and innovative groups have harnessed it to create devices with unique composition, structure, and customizability. These distinctive capabilities afforded by 3D printing have introduced new regulatory challenges. The customizability of 3D-printed devices introduces new complexities when drafting a design control model for FDA consideration of market approval. The customizability and unique build processes of 3D-printed medical devices pose unique challenges in meeting regulatory standards related to the manufacturing quality assurance. Consistent material powder properties and optimal printing parameters such as build orientation and laser power must be addressed and communicated to the FDA to ensure a quality build. Post printing considerations unique to 3D-printed devices, such as cleaning, finishing and sterilization are also discussed. Applying the same design and quality control strategies utilized in standard manufacturing methods with 3D printing will result in a controlled output and consistent production of devices. The expansion of 3D printing technology has produced innovative medical devices with novel composition and structure. This study highlights the unique regulatory challenges for device design development, manufacturing, biocompatibility, and sterilization with respect to USFDA consideration.

Keywords: FDA, Quality, Implantable devices

REGULATORY REQUIREMENTS ON BIOEQUIVALENCE GUIDANCE FOR REGISTRATION OF GENECRIC DRUG PRODUCT IN EUROPE AND BRAZIL

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ABSTRACT

A Generic drug product is one that is comparable to an innovator drug product in dosage form, strength, and route of administration, quality, performance characteristics and intended use. The Generic product should be therapeutically equivalent and interchangeable with the reference product. Generic drugs provide the same efficacy and safety as branded drugs, but at a substantially reduced cost. This study explains the differences in regulatory requirements for generic drug applications in Europe and Canada. Bioequivalence studies play a key role in the development period for both new drug products and their generic equivalents. Bioequivalence study data is significant in the generic drug approval process. Although the CTD makes multinational filing easier, there are significant differences in the dossier submission needs in these countries. The present study highlights the comparative study regulatory requirements on importance of bioequivalence studies in Europe and Canada.

Keywords: Generic drug, Bioequivalence, CTD, Dossier

STUDY ON THE EXTENT OF HARMONIZATION OF RE GULATORY REQUIREMENTS FOR REGISTRATION OF DRUG PRODUCTS IN BETWEEN ASEAN AND AFRICAN COUNTRIES

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ABSTRACT

For the fast approval and early access to the safe, quality and efficacious medicines to the people of ASEAN (Singapore and Malaysia) and African (Kenya and Ethiopia) nations, drug registration requirements should be similar in the countries in which the product is filed. This uniformity in the requirements for the drug registration can be brought by the process of harmonization, where harmonization refers to the process of minimizing conflicting standards which may have evolved independently. A proposal was set up by Malaysia, which was an endorsed by the relevant bodies. Even though the harmonization took place, still the differences in the requirements for product registration are delaying the approval process, so by incorporating the single window clearance system, and if all countries are able to accept electronic submissions of dossiers, it will result in fast filing, and further results in fast review, and fast approval of drug products filed for registration. In AFRICAN Nations, even though there is no such harmonization that took place as in case of ASEAN Nations, the drug registration requirements are same for most of countries under consideration, so by the overview of this study we can conclude that, the harmonization of drug registration requirements will further result in the fast approval and early access to safe, quality and efficacious medicines to the people of African nations.

Keywords: Harmonization, Pharmaceutical standards, Dossiers

NAVIGATION PATHWAY FOR APPROVAL OF DRUG PRODUCTS IN AUSTRALIA AND CANADA

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ABSTRACT

Initial a new drug (Chemicals) from the proof-of-concept stage to the advertising stage is an expensive and intricate process. It involves so many years of study and increase work. To save time and money in bringing products to market, product increase performance should be conducted in unity with the related regulatory requirements. These requests can inform development activities and help you to manufacture a product that meets the regulatory standards of your targeted influence that is, a quality product that is safe and effective for its proposed use. Even though information on the regulatory requirements (e. g., laws, supervision documents, worldwide standards for healthcare product development is eagerly available, navigating the regulatory system is not simple, and it gets even more difficult when dealing with multiple jurisdictions. To help entrepreneurs who are developing healthcare products. The main aim is to help the regulatory understanding that governs product development and certify regulatory observance. It can be used as a starting point to assist you in developing your product. Rather than helping as a compilation of regulations, the guide discusses the primary concepts and principles in regulatory affairs. It gives entrepreneurs a road map to follow.

Keywords: Regulatory requirements, Navigation, Regulations and healthcare products

IMPACT OF ALUMINIUM CHLORIDE ON LIPID PROFILE IN WISTAR ALBINO RATS

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ABSTRACT

The present study was to investigate the toxic impacts of aluminium chloride on lipid profile in Wistar rats and to evaluate the protective effects of hydro alcoholic extract of fruit pulp of *Hippophae salicifolia* D. Don. (HAHS). Wistar Albino rats were assigned into three groups (n=6) and were administered respectively the vehicle, aluminium chloride 300 mg/kg (aluminium chloride is proven to induce oxidative stress), aluminium chloride 300 mg/kg+HAHS 400 mg/kg respectively for 21 d (HAHS is already been proven to be effective against aluminum toxicity at the dose of 400 mg/kg by combating oxidative stress). The animals were evaluated for their lipid profile including total cholesterol, triglycerides, high density lipoprotein, low density lipoprotein, very low density lipoprotein.

No significant toxic effects were observed on lipid profile with 21 d administration of aluminium chloride. However, treatment with HAHS had significantly improved the lipid profile when compared to 0^{th} day within the group. Chronic administration of aluminium chloride is known to produce oxidative stress but no significant impairments were observed on lipid profile with 21 d administration at the dose of 300 mg/kg. However considering the short duration of the present study, a longer duration of study is required to get concrete information regarding the impact of aluminium chloride on lipid profile and information regarding the effect of HAHS.

Keywords: Aluminium chloride, Lipid profile, *Hippophae salicifolia*

EVALUATION OF FREE RADICALS SCAVENGING POTENTIALS OF ETHNOMEDICINAL PLANTS OF PERNEM (GOA) AND THEIR INCORPORATION IN TO ALGINATE-COATED GAUZE

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ABSTRACT

The ethanomedicinal plants selected for the study were used in the treatment of wounds by the traditional healer of Pernem-Goa. They were identified as *Calycopteris floribunda* (Combretaceae), *Leea indica* (Vitaceae), *Allophylus serratus* (Sapindaceae), *Terminalia paniculata* (Combretaceae) and *Sapium insigne* (Euphorbiaceae). The selected plants were evaluated for total phenolic, total flavonoidal content and *in vitro* antioxidant activity. Alginate wound dressings were formulated to replicate and improvise the formulation of the traditional healer. 0.5% w/v concentration of sodium alginate (Na-AG) with immersion time of 120 sec was considered ideal for the formulation of AG wound dressings. 0.025, 0.5 and 0.1% plant extract was loaded on AG coated gauze. Formulation F1 and F4 were found to be ideal and showed a drug release of more than 99 % in 24h.

Keywords: Ethanomedicinal, Pernem, Alginate wound dressings

TRITEPENOIDS FROM DESMODIUM OOJEINENSIS AND *IN VITRO* CYTOTOXIC ACTIVITY

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ABSTRACT

Desmodium oojeinensis (Roxb.) H. Ohashi belonging to the family Fabaceae is a medicinal plant found in Himalayan and Sub-Himalayan tract and commonly known as Sandan. Four triterpenoids namely Betulin, Betulinic acid, 16-Hydroxybetulinic acid and Lupeol have been isolated from the stem bark of *Desmodium oojeinensis* by column chromatography. The structures of these compounds have been established by spectroscopic methods. The ethanolic extract was subjected to *In vitro* cytotoxic Activity using MCF-7 and A-549 cell lines by SRB assay method. The results indicated moderate cytotoxic activity on Human Lung Cancer Cell Line A-549 at concentration of 80 µg/ml.

Keywords: *Desmodium oojeinensis,* Betulin, Betulinic acid, 16-hydroxybetulinic acid, Lupeol SRB assay

ISOLATION AND PRELIMINARY LARVICIDAL ACTIVITY FROM IONIDIUM SUFFRITICOSUM

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ABSTRACT

Ionidium suffriticosum (Ging.) belonging to the family Violaceae, commonly known as Purushratna, distributed in the warmer parts of Deccan peninsula in India. Plant has been reported to possess antidiabetic, antiplasmodial, antimicrobial, anticonvulsant, nephroprotective, aphrodisiac, hepatoprotective, antinflammatory, aldose reductase inhibitory and free radical scavenging activities. Four flavonoids Rutin, Quercetrin, kaempherol-7-o-β-d-glucopyranosyl-(2→1)-α-d-rhamnopyranoside and Hesperidin have been isolated from the n-butanol fraction of methanolic extract of whole plant. The structures of these compounds have been established by spectroscopic methods. Preliminary larvicidal activity was carried out on Ethyl acetate, n-butanol and aqueous soluble fraction of methanolic extract against *Anopheles stephensi, Culex quinquefasciatus and Aedes aegypti* larvae. The results showed that the n-butanol fraction exhibited significant percent mortality after 48h against *Aedes aegypti*.

Keywords: *Ionidium suffriticosum,* Purushratna, Flavonoids, Larvicidal activity

SURFACE MODIFIED DOUBLE LIPOSOMES CONTAINING PREDNISOLONE AND METHOTREXATE FOR EFFECTIVE MANAGEMENT OF RHEUMATOID ARTHRITIS

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ABSTRACT

This investigation was aimed to explore the targeting potential of folate conjugated double liposomes (FDLs) bearing combination of synergistic drugs (Prednisolone and Methotrexate) for effective management of the rheumatoid arthritis (RA). To overcome drawbacks of monotherapy, a combination of prednisolone (PRD) (first line medication; an anti-inflammatory agent) and methotrexate (MTX) (second line medication; a disease modifying anti-rheumatoid agent, DMARDs) was selected for dual targeting approach. FDLs were prepared in two steps i.e. development of inner liposomes (ILs) using thin film casting method followed by encapsulation of ILs within folate conjugated outer liposomes (double liposomes; FDLs). FDLs were prepared using FA-PEG-4000-NH-DSPE conjugate. These double liposomes were having 429.3±3.6 nm in size with 0.109 PDI, 8±0.3 mV zeta potential (ζ) and 66.7±3.9% and 45.3±1.7% entrapments of PRD and MTX, respectively. After 24 hr, the concentration of drugs i.e. PRD in blood were observed to be 8.66±3.11% and 15.13±0.81 % while concentration of MTX were 10.89±0.69 %, and 2.34±3.15 in case of ILs and fDLs, respectively. The concentration of both drugs in inflamed joint was observed to be higher than that in the non-inflamed joints. This study concludes that the folate conjugated double liposomes possess superior targeting efficiency than conjugated single liposomes and unconjugated single liposomes.

Keywords: Rheumatoid arthritis, Folate, Liposomes, Methotrexate, Prednisolone, Inflammation

DEVELOPMENT AND CHARACTERIZATION OF METFORMIN LOADED MICROSPHERES FOR EFFECTIVE MANAGEMENT OF DIABETIC HYPERGLYCAEMIA

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ABSTRACT

The aim of the present study is the development of floating microspheres using Metformin hydrochloride for the effective management of diabetic hyperglycaemia. The resultant formulation will enhance the gastric residence time without any contact with the mucosa. Floating microspheres were prepared by chemical denaturation method using chitosan as polymer and glutaraldehyde as a cross-linking agent. The prepared microspheres were further characterized for surface morphology using scanning electron microscopy (SEM) method and are found to be regular in shape. The effect of varying drug concentration, polymer concentration, stirring rate during formulation, and cross-linking agent concentration on the percent yield, *in vitro* floating behaviour, drug loading and *in vitro* drug release were also studied. The prepared microspheres showed drug release for up to 12 h and favourable *in vitro* floating characteristics for more than 11 h. The rate of release of drug from the formulated microspheres varied significantly by varying agitation speed, polymer and cross-linking agent concentration. Thus, from the obtained results it can be said that the formulated floating microspheres can be used as an effective carrier for Metformin and will provide prolonged drug release for the management of diabetic hyperglycaemia for a prolonged duration of time.

Keywords: Microspheres, Diabetic hyperglycaemia

RELEASE PROMOTER-BASED NANOCOMPOSITE(S): FOR SITE SPECIFIC DELIVERY OF IMMUNOBIOACTIVE(S)

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ABSTRACT

Vaccination is considered as one of the most significant achievements in medicine that plays an important role in preventing infectious diseases. Tumor immunotherapy or vaccines are an attractive alternative approach for the effective treatment of cancer. The purpose of present approach is to target C-Type lectin receptors (CTL) for the preferential internalization by the macrophages/dendritic cells and improving the presentation of ovalbumin by mannose decorated release promoter nanoliposomes and observing its combinatorial immunopotentiatory effect using C57BL/6 mice model. Conventional and engineered nanoliposomes (MPNLs) were fabricated and extensively characterized. The nanoliposome(s) was spherical in shape; and their PDI, size and ovalbumin loading efficiency were recorded to be 268±4.15 nm, 0.121±0.014, 46.65±1.84%, respectively. CTL receptor mediated internalization allows for quick and successive accumulation of OVA Ags for subsequent presentation of MHC through constitutive recycling; to enhance endocytosis and leading the processing and presentation of OVA antigen(s) in the association of both MHC class I and II molecules to CD4+or CD8+T lymphocytes. This combinatorial approach mannose surface modification for active targeting to dendritic cells/macrophages and pH dependent quick cytosolic OVA Ag release is a promising system for efficient cancer immunotherapy and can be further investigated for various types of new generation cancer immunotherapies.

Keywords: Nanocomposite(S), Immunobioactive(S)

BLUE EYE TECHNOLOGY

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ABSTRACT

The 21st century is a time of speed and shrewdness, people get emotionally distracted in this world due to their daily life schedule and innovations not only about technology but everything from your hair to your feet. Everyone gets stuck to and tries how will be increasing their value in society. No one has a time to ask each other what's wrong with you. So in this world the blue eye technology allows two people interact with computer with the help of human six basic emotional sense organs such as disgust, surprise, anger, fear, happiness and sadness. The general and fundamental thought of this innovation is extremely straight forward and it is that the people will make a computer which has the ability to identify individuals emotional as well. The blue eyes innovation based on the sensors, Bluetooth, and the focal unit; they allow to connect human emotions to the computer. BLUE stands for Bluetooth, which empowers dependable remote correspondence and EYES. It helps to identify human confusion and happiness. The goals of this technology are to create a healthy environment in the workplace, make an ability in a computer to identify human emotions so computer can talk, listen and may respond in suitable fashion to make people happy.

Keywords: Bluetooth, Wireless gadgets, Simple user interest tracker (suitor) and emotional mouse

NANOGEL-A TRANSCENDING CARRIER FOR EFFECTIVE DRUG DELIVERY

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ABSTRACT

"Nanogels" as the name suggests are the nanosized particle where the particle size of the encapsulated particle ranges from 1-1000 nm. Nanosized particles are formed by crosslinking of polymer networks. The polymers used are both natural as well as synthetic. Nanogels has variety of advantages but it's biggest strength lies in its particle size which is useful for targeting of drugs in both ways that is active as well as passive targeting. Various side effects of drugs can be reduced as well as controlled and sustained drug release can also be achieved. Nanogels are also highly biocompatible and biodegradable which suggests about the safety of this drug delivery system. Swelling property and high drug loading capacity are the other advantages.

Nanogels can be classified as non-responsive nanogels in which the gel polymer simply swells in presence of water and responsive nanogels in which gel polymer swells due to external environment. Nanogels have variety of applications in various diseases such as Cancer, Hyperlipidaemia, Anti-inflammatory and many more. The route of administration also wide and varied and includes oral, parental, intraocular, topical, nasal etc. Hence, due its advantages outweighing its disadvantages it is one of the finest candidate for drug delivery system.

Keywords: Effective drug delivery, Transcending carrier

PRIALT-A BLESSING OR VENIN–A REVIEW

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ABSTRACT

SNAIL VENOM contains a pain killer 100 times more powerful than morphine. And it works at much lower doses without the risk of addiction, Prialt also called as Ziconotide is a powerful pain killer used when morphine no longer works. It is based on a component in the venom of a marine snail which is called *conus magus* and belongs to the cones group. The snail uses the venom to paralyze the fish before eating them. This venom is made of a hundred or more different peptides that inside a snail are harmful to people. But one particular peptide can dramatically reduce pain. Right now prialt is used in extreme unrelenting or chronic pain. This could reduce the use of opioids, such as morphine which are addictive and can cause serious side effects.

Keywords: Blessing or venin

LEAD (PB): TOXICITY AND REGULATORY PERSPECTIVES

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ABSTRACT

In an day to day life, all people in the world are been affected by heavy metals to some extent, these heavy metals are potent and toxic when exposed or taken more than permitted daily exposure (PDE) and heavy metals causes serious health issues for all types of living organisms and exposure of these caused through many ways by taking heavy metal contaminated dietary and processed food material etc.,. According to the ICH guidelines Q3D, Class-1 there is four highly toxic heavy metals impurities and they are Arsenic (As); Cadmium (Cd); Mercury (Hg); Lead (Pb). So it is necessary to be aware about the mortal data of the heavy metals. In the write up, we emphasize about the one of the highly toxic heavy metal element Lead (Pb), its toxicity (animals, humans, plants and aquatic systems) and various regulatory authorities for monitoring heavy metals throughout the globe like IOSH, EPA, EMA, and CDCSO.

Keywords: Heavy metals**,** Lead (pb), Toxicity and regulatory perspectives

METHOD DEVELOPMENT FOR READY-TO-DILUTE SUGARCANE JUICE BEVERAGE POWDER BY SPRAY DRYING TECHNIQUE

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ABSTACT

A process has been developed for preparation of chemical free dried sugarcane juice powder/granules using a spray drying technique. India is the second largest producer of sugarcane next to Brazil. Indian sugar cane finds its application in the following segment. Nearly about 50% quantity of cane produced will be utilized by the sugar factories for the production of white sugar and the rest goes for preparation of different forms of jiggery. Traditional Indian Medicine system recommends sugarcane juice to cure a wide range of ailments like fever, jaundice, urinary disorders and others to a small extent.

Sugarcane juice is used as a refreshing natural energy drink, delicious drink in both urban and rural areas of many countries. Juice is a healthy alternative to refined sugar added drinks because it is a naturally flavored drink on its own. Fresh juice cannot be stored normally for more than six hours due to the presence of simple sugars, which spoils the juice quickly. If this spoilage is prevented, the juice can be preserved and used as a good beverage. The sugarcane juice has medicinal values, besides it also provides energy, certain vitamins and minerals. The synthetic drinks available in the market have mainly sugar, citric acid and flavor.

Keywords: Sugarcane juice powder, Vitamins and minerals

CONJUGATED DENDRIMERS: A NEW ERA FOR CANCER TARGETED DRUG DELIVERY

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ABSTRACT

More than 11 million people are diagnosed with cancer every year. It represents an enormous biomedical challenge for drug delivery and its treatment is very much dependent on method of delivery. Dendrimers are homogenous, nano-magnitude, mono-disperse, symmetric molecules consisting of the tree like arms or branches and have a core unit, internal and external shell. Dendrimers conjugated with anticancer drugs for targeted drug delivery have drawn attention and advancements in cancer treatment because of their size, their ease of preparation and functionalization and their ability to display multiple copies of surface groups for recognition process. This review includes a lists of FDA approved anticancer drugs and some examples of anticancer drugs are cited which are conjugated with dendrimers to overcome the problems associated with drugs that may not be in clinical use due to suboptimal pharmacokinetic profile, hydrophobicity, etc. The concluded benefits of dendrimers conjugated with anticancer drugs are enhanced therapeutic concentration of anticancer agent at the derived sites of action, spares normal tissues; promises reduced systemic toxicity and enhanced therapeutic efficiency.

Keywords: Dendrimers, Targeted Delivery, Anti-cancer drugs

SURVEY OF COTTAGE HOSPITAL: THE PERSPECTIVE TO RURAL HEALTH CARE

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ABSTRACT

The ethical Hospital pharmacy and Health care practices emerges a new level of civilization in India. The extent and intensity of needs gives many challenges to pharmacist and physician towards their responsibilities and authorities. To understand that and act accordingly there is need to analyze the existing hospital agenda and directivities towards the patient care. The methodology proceeded to the actual venue at civil hospital and documenting the opinions of people based on the top questions can be asked on respective due regards of hospitals. The common venue to the survey is nearest cottage hospitals. On rural basis the facilities with best economical outcomes to patient is set the prior criteria. The public interest is interpreted to reveal resulting conclusions to act and direct the remedies if any. The statistics are done and resulted discussions are put forth. As aspect of pharmacy as Hospital Pharmacist there is need of co-ordination between pharmacist, physician and patient to maintain the health care rationality. The applicability of the survey toward the provisions to the better health cares and also identifies the necessities to existing process. The present facilities with some improvements and advancement can stabilize the system with better outcomes. This survey will definitely result in the good use and useful in many aspects of medical field.

Keywords: Patient care, Public interest, Remedies, Economical outcomes

NOVEL THERAPEUTIC TREATMENT STRATEGIES FOR TRIPLE-NEGATIVE BREAST CANCER (TNBC)

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ABSTRACT

The objective of this study was to implement novel therapeutic treatment to cure a patient who suffered from triple negative breast cancer. Triple-negative breast cancer (TNBC) is an advanced cancer type of heterogeneous disease; gene expression analyses recently identified six distinct TNBC subtypes, each displaying a unique biology. Exploring novel approaches to the treatment of these subtypes is critical. novel approaches to treatment of TNBC is used some therapy like DNA-damaging chemotherapy and DNA repair targets we ware to used PARP inhibitors Epidermal growth factor receptor, Anti-androgen chemotherapy to target the DNA. some another therapy like Neoadjuvant chemotherapy Platinum salts, agent used in neoadjuvant chemotherapy we are discussing the recent developments in targeted agents explored for TNBC, aiming to offer novel therapeutic strategies that can potentially assist in designing personalized therapeutics in the future as well as provide the basis for further research in an attempt to target TNBC. The targeted therapy drugs could become the main content of research currently and in the future. PARP inhibitors and platinum salts might, in an even better fashion, be incorporated into other drugs for the clinical treatment of TNBC.

Keywords: TNBC, Target therapy, Neoadjuvant therapy, Novel therapy

FORMULATION AND EVALUATION OF SURFACE ENGINEERED DOXORUBICIN LOADED SOLID LIPID NANOPARTICLES FOR TARGETED DELIVERY TO OVARIAN CANCER

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ABSTRACT

The present study discusses doxorubicin loaded solid lipid nanoparticles (SLNs) using hyaluronic acid as a receptor ligand conjugate for ovarian cancer targeting and to increase the anticancer activity of HA-SLN-DOX against SKOV3 ovarian cancer cells. HA-SLN-DOX were prepared by solvent injection method and hyaluronic acid was conjugated to free amine group of stearylamine. HA-SLN obtained was characterized for their particle size, polydispersity index, zeta potential and morphology by scanning electron microscope. The HA-SLN-DOX were spherical in shaped with 171.6±2.3 nm average size, zeta potential-27.4 mV, 77.95±1.6 drug entrapment efficacy and showed the *in vitro* drug release 98.87 % over 96 h which indicated the doxorubicin loaded SLNs provided sustained release over a period of 96 h and release behavior was in accordance with higuchi equation. The Methylthiazole tetrazolium (MTT) cytotoxicity study was performed to determine the ovarian cancer targeting propensity of the DOX loaded solid lipid nanoparticle using SKOV-3 (ATCC) (Human ovarian cancer) cell line and compared with SLNs and free DOX solution. The IC50 value of HA-SLN-DOX was found approximately 0.02 µg/ml as compared to SLN-DOX (0.02 µg/ml) and free DOX (0.5µg/ml). The Cellular uptake study was performed to determine internalization capability of SLNDOX, HA-SLN-DOX by SKOV-3 cell. The HA-SLN-DOX shows significant higher cellular uptake as compared to SLN-DOX as well as free DOX. These results suggested that doxorubicin loaded hyaluronic acid SLNs are safe and potential vector for ovarian cancer targeting.

Keywords: Doxorubicin loaded Solid, Lipid nanoparticles, Ovarian cancer

IMPACT OF PHARMACOVIGILANCE ON ANALYSIS OF ADVERSE DRUG REACTIONS IN INDIA

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ABTRACT

WHO defines pharmacovigilance is the science of collecting, monitoring, researching, assessing and evaluating information from healthcare providers and patients on adverse effects of medications, biological products, herbal products and traditional medicines. It includes proactive monitoring and reporting on quality, safety and efficacy of medicines, assessment of risks and benefits of marketed medicines, monitoring impact of any corrective actions taken, providing information to consumers, practitioners and regulators on effective use of drugs, designing programs and procedures for collecting and analyzing reports from patients and clinicians, detection of increases in frequency of adverse drug reactions (ADRs), etc. India is a country with current population 1,358,184,240 based on estimates of United Nations. Indian government has started a program as Pharmacovigilance Program of India (PvPI) in 2010 in collaboration with Indian Pharmacopoeia Commission (IPC). Presently, Medical Council of India approved 179 teaching and corporate hospitals for ADRs Monitoring Centers (AMCs) around the country. Since five years, National Coordinating Centre (NCC) has played a significant role in creating awareness in healthcare professionals on reporting ADRs who saw more than 1,49,000 ADRs reported till December 2015. The CDSCO has notified significant safety label changes for carbamazepine and piperacillin+tazobactam in year 2015. Currently, the contribution of India to the WHO global Individual Case Safety Reports (ICSRs) database is 3%. Therefore, ADRs reporting through PvPI improved with the measures like training, education and prerequisite of technical assistance.

Keywords: Pharmacovigilance, WHO, Adverse Drug Reactions

A REVIEW ON ROLE OF SOME HERBAL CONSTITUENTS IN PESTICIDES INDUCED REPRODUCTIVE TOXICITY IN EXPERIMENTAL ANIMALS

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ABSTRACT

In concern about the susceptibility of the male and female reproductive system to drugs or environmental agents has assumed an increasing extent. The outcome of such exposures have included not only reduced fertility but also embryo/fetal loss, birth defects, childhood cancer, and other reproductive and postnatal or functional deficits. Pesticides are also suspected for a wide range of chronic effects, which can occur months or years after the exposure, such as cancers, neurological, reproductive and developmental toxicity, immunotoxicity, genotoxicity, respiratory effects and disruption of the endocrine system. Pesticides may affect not only the exposed individual but also subsequent generations. Organophosphate (OP) pesticides are among the leading chemicals widely used for agricultural pest control throughout the world. The enzymatic mechanism is made of free radical scavengers like catalase (CAT), superoxide dismutase (SOD) and glutathione-depend enzymes such as glutathione peroxidase (GPx), glutathione reductase (GS), and glutathioneS-transferase (GSH). Flavonoids can prevent oxidative damage as a result of their ability to scavenge reactive oxygen species. In present review it has been proposed that plant bioactive can be a good option for the treatment of pesticides induced organs toxicity.

Keywords: Pesticides, Organophosphate, Toxicity, Reproductive, Free Radicals

FORMULATION AND EVALUATION OF SURFACE ENGINEERED DOXORUBICIN LOADED SOLID LIPID NANOPARTICLES FOR TARGETED DELIVERY TO OVARIAN CANCER

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ABSTRACT

The present study discusses doxorubicin loaded solid lipid nanoparticles (SLNs) using hyaluronic acid as a receptor ligand conjugate for ovarian cancer targeting and to increase the anticancer activity of HA-SLN-DOX against SKOV3 ovarian cancer cells. HA-SLN-DOX were prepared by solvent injection method and hyaluronic acid was conjugated to free amine group of stearylamine. HA-SLN obtained was characterized for their particle size, polydispersity index, zeta potential and morphology by scanning electron microscope. The HA-SLN-DOX were spherical in shaped with 171.6±2.3 nm average size, zeta potential-27.4 mV, 77.95±1.6 drug entrapment efficacy and showed the *in vitro* drug release 98.87 % over 96 h which indicated the doxorubicin loaded SLNs provided sustained release over a period of 96 h and release behavior was in accordance with higuchi equation. The Methylthiazole tetrazolium (MTT) cytotoxicity study was performed to determine the ovarian cancer targeting propensity of the DOX loaded solid lipid nanoparticle using SKOV-3 (ATCC) (Human ovarian cancer) cell line and compared with SLNs and free DOX solution. The IC50 value of HA-SLN-DOX was found approximately 0.02 µg/ml as compared to SLN-DOX (0.02 µg/ml) and free DOX (0.5µg/ml). The Cellular uptake study was performed to determine internalization capability of SLNDOX, HA-SLN-DOX by SKOV-3 cell. The HA-SLN-DOX shows significant higher cellular uptake as compared to SLN-DOX as well as free DOX. These results suggested that doxorubicin loaded hyaluronic acid SLNs are safe and potential vector for ovarian cancer targeting.

NOVEL THERAPEUTIC TREATMENT STRATEGIES FOR TRIPLE-NEGATIVE BREAST CANCER (TNBC)

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ABSTRACT

The objective of this study was to implement novel therapeutic treatment to cure a patient who suffered from triple negative breast cancer. Triple-negative breast cancer (TNBC) is an advanced cancer type of heterogeneous disease; gene expression analyses recently identified six distinct TNBC subtypes, each displaying a unique biology. Exploring novel approaches to the treatment of these subtypes is critical. novel approaches to treatment of TNBC is used some therapy like DNA-damaging chemotherapy and DNA repair targets we ware to used PARP inhibitors Epidermal growth factor receptor, Anti-androgen chemotherapy to target the DNA. some another therapy like Neoadjuvant chemotherapy Platinum salts, agent used in neoadjuvant chemotherapy we are discussing the recent developments in targeted agents explored for TNBC, aiming to offer novel therapeutic strategies that can potentially assist in designing personalized therapeutics in the future as well as provide the basis for further research in an attempt to target TNBC. The targeted therapy drugs could become the main content of research currently and in the future. PARP inhibitors and platinum salts might, in an even better fashion, be incorporated into other drugs for the clinical treatment of TNBC.

Keywords: TNBC, Target therapy, Neoadjuvant therapy, Novel therapy

LIPOSOMAL DRUG DELIVERY OF PLACENTA EXTRACT AN NOVEL APPROACH

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ABSTRACT

Liposomal products in pharmaceutical science for drug development proffer a successful deliverance of drug candidates which are highly potent and have low therapeutic indication can be targeted to for efficient management of therapeutic lesson. Therapeutic moiety encapsulated in these systems can have a significantly altered pharmacokinetics. The effectively of liposomal formulation depends on its ability to deliver the drug molecule to the targeted site over a prolonged period of time, simultaneously reducing drug's toxic effects. These moieties are encapsulated within the phospholipid bilayers and are expected to diffuse out from the bilayer leisurely. The placental extract can be incorporated in the liposomal drug delivery system. The placenta is an organ with the role of protecting and nurturing the baby in a mother's womb, which serves as an interface for the supply of oxygen and nutrients from the mother to the baby, but in order for the baby to grow healthily within the womb, the placenta works in a truly range of ways, including digestion and excretion in place of the internal organs of the still developing baby, the secretion of hormones, and the provision of an immune system to make it difficult for the baby to contract illnesses. Conversely, the placenta is also an organ that synthesizes "cell growth factor", a substance that controls the growth and replication of cells. Fetal membrane stem cells are presently preserved mainly for research. However, as these cells gain interest for their regenerative and immunomodulatory properties.

Keywords: Liposome, Phospholipids bilayers, Immune system, Immunomodulatory, Fetal membrane

DRUG NANOCRYSTALS–FROM PRE-FORMULATION CONSIDERATIONS TO THE FINAL FORMULATED ORAL DOSAGE FORM:-RECENT RESEARCHES, ADVANCES AND PATENTS

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ABSTARCT

Poor solubility of drug compounds is a great issue in drug industry today and decreasing particle size is one efficient and simple way to overcome this challenge. Drug nanocrystals are solid nanosized drug particles, which are covered by a stabilizer layer. In nanoscale many physical properties, like compound solubility, are different from the solubility of bulk material, and due to this drug nanocrystals can reach supersaturation as compared to thermodynamic solubility. Additionally, the different preparation methods used to prepare the drug nanocrystals are also well-established and patented. We have reviewed decade research, advances in formulation and their approaches related to drug Nanocrystal technology with emphasis given on different patents related to nanosuspension methods.

Keywords: Nanocrystals, Characterization, Poorly soluble drugs

FORMULATION AND EVALUATION OF GINGER OLEORESIN IN CARBON TETRACHLORIDE INDUCED HEPATOTOXICITY IN RATS

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ABSTRACT

The present study evaluated the hepatoprotective activity of ginger oleoresin against Carbon tetrachloride induced liver toxic damage in rats. Rats were divided into six groups. Hepatotoxicity was induced by the administration of a single intraperitoneal dose (2 ml/kg) of Carbon tetrachloride in experimental rats. Biochemical parameterfor oxidative stress, inflammation and lipid profile along with genotoxicity and histological changes in rat serum and liver were studied. The hepatoprotective action of ginger oleoresin may be related to its free radical scavenging,anti-inflammatory and hypolipidemic activity and concluded to be partly mediated by its active constituent's 6-gingerol, shogaol and zingerone.-phosphate; CCl_3*, Trichloromethyl free radical; CCl_3OO*, Trichloromethyl peroxy radical; ROS, Reactive oxygen species; iNOS, inducible nitric oxide synthase; NO, Nitric oxide, VLDL, Very low density lipoprotein.

Keywords: Ginger oleoresin, Hepatotoxicity

NANOCRSYTAL BASED FORMULATION FOR OCULAR DRUG DELIVERY

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ABSTRACT

Low oral bioavailability and general delivery problems related to poorly water soluble drugs are major challenges in pharmaceutical formulation development. Nanocrystal technologies have been introduced as advantageous, universal formulation approaches for these molecules. Nanocrystals, with greater surface to volume ratio, can effectively increase both the dissolution rate and saturation solubility of active ingredients By definition, drug nano-crystals are nanoparticles, *being composed of 100% drug without any matrix material*, typically with a size range between 100 and 500 nm. Several methods are used to reduce the particle size of a drug—that is, bottom-up and top down technologies. The bottom-up technologies begin by dissolving the molecules and then precipitating them by adding the solvent to a non-solvent this method enquires relatively simple, low-cost equipment. Primary focus of research is to develop ophthalmic, IOP reducing nanocrystal formulation using *nanocryst*al technology *developed in our Laboratory* and to investigate the IOP lowering effect *in vivo* using a new rat ocular hypertension model

PREPARATION, CHARACTERIZATION AND PHARMACOKINETICS OF NANOCRYSTAL FORMULATION FOR POORLY SOLUBLE DRUG

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ABSTRACT

An increase in number of newly developed synthetic drugs displays bioavailability constraints because of poor water solubility. Nanosuspensions formulation may help to overwhelm these problemsby increasing dissolution velocity and saturation solubility. In the present study, nanosuspension of poorly soluble drug was successfully prepared by precipitation method method using optimized stabilizer. The nanosuspension had uniform particle distribution, excellent sedimentation rate and redispersibility. The nanosuspension significantly improved the solubility, dissolution and bioavailability. The saturation solubility of model drug (Z) nanocrystal was higher than that of bulk (Z) and released the total drug in very short time. Further, pharmacokinetics of Z nanosuspension and normal suspension following oral administration was investigated in beagle dogs. Maximum concentration and area under concentration time curve were increased with particles size reduction which might give rise to pronounce fluctuations in plasma concentration and more intensified antibacterial effects. The terminal half-life and mean resident time of Z nanosuspension had also increased compared to normal Z suspension. In conclusion, nanosuspensions may be a suitabledelivery approach to increase the bioavailability of poorly soluble drugs.

Keywords: Nanocrystal Formulation, Poorly soluble drug

STRUCTURE BASED DESIGNING AND ADME-T STUDIES OF BUTENOLIDE DERIVATIVES AS POTENTIAL AGENTS AGAINST RECEPTOR ICAM-1: A DRUG TARGET FOR CEREBRAL MALARIA

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ABSTRACT

Cerebral malaria (CM) is a worldwide severe complication of *Plasmodium* infection and responsible mainly for the morbidity and mortality in children and non-immune adults. The main pathogenetic events in CM, is the adhesion of infected erythrocytes to the brain endothelial cells, which is mediated mainly through the host receptor intercellular adhesion molecule-1(ICAM-1). This receptor is considered as the potential chemotherapeutic target against CM which was used for structure based designing of butenolide derivatives in present work. ADME-T studies were also performed to further optimize the lead molecules for "druglikeliness" and non-toxic behavior. In molecular docking analysis binding conformations were compared with Artesunate (standard), main drug used in the treatment of cerebral malaria. The binding site was constituted by amino acid residues such as Arg116, Glu138, Gly137, Thr120, Ala135, Glu162, Ala135 and Gln118 of ICAM-1 receptor, designed lead molecules also exhibited comparative binding in the vicinity of artesunate with active site amino acid residues of protein ICAM-1. The whole effort leads to finally total nine most promising analogues (1c, 2b, 2c, 2d, 2h, 3c, 3d, 3i and 4d) which can be explored further as a template to design more potential agents against cerebral malaria

Keywords: Cerebral malaria pathogenesis, ICAM-1, Butenolide, Artesunate, Docking, ADME-T

DENDRIMERS: A NOVEL APPROACH FOR TARGETED DRUG DELIVERY SYSTEMS

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ABSTRACT

Dendrimers are a novel class of synthetic macromolecules having highly branched, three dimensional, nanoscale structures with very low polydispersity and high functionality. The structure of these materials has a great impact on their physical and chemical properties. These unique features have made their application in nanotechnology, pharmaceutical and medical chemistry particularly attractive. As a result of their unique behavior, dendrimers are suitable for a wide range of biomedical and industrial applications. These carriers have well defined size, shape, molecular weight and monodispersity, which make the dendrimers a suitable carrier in drug delivery application. Dendrimers have the ability to encapsulate and bind the guest molecule can be used for solubility enhancement, sustained release and various drug delivery applications.

Keywords: Dendrimer, Drug delivery, NDDS

PHYTOSOMES: A NOVEL APPROACH FOR HERBAL DRUG DELIVERY

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ABSTRACT

Phytosomes, are the tiny structures which serves as intermediate between the conventional and novel drug delivery system. These are the cells, which are able to carry themselves from a hydrophilic to the lipid environment of the cell membrane, which ultimately reaches the blood. The hydrophilic plant constituents, which find their application in skin disorders, anti-ageing possess and different type of carcinomas are difficult in processing into conventional delivery system and hence transformed into phytosomes. Phytosomes are the complexes prepared by mixing polyphenolic phytoconstituents and phosphatidylcholine in molar ratio. Phytosomes are superior to the conventional drug delivery systems in terms of pharmacokinetic and pharmacodynamic properties. Phytosomal delivery of the extracts of Ginkgo biloba, Grape seed, Green tea, Ginseng, etc. has been profitably used. Phytosomes have been refined for therapeutic uses like cardiovascular, anti-inflammatory, immunomodulator, anticancer, antidiabetic etc. or for preventive and health reasons. In the ever-expanding pharmaceutical horizon, exploration of Phytosome technology is much needed.

Keywords: Phytosomes, Herbal formulation, Phospholipid

ETHOSOMES: A NOVEL APPROACH FOR TRANSDERMAL DRUG DELIVERY

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ABSTRACT

Ethosomes are noninvasive delivery carriers that enable drugs to reach the deep skin layers and/or the systemic circulation. Ethosomes are specially tailored vesicular carriers able to efficiently deliver various molecules with different physicochemical properties into deep skin layers and across the skin. A proposed mechanism of the percutaneous permeation enhancing effect of ethosomal system is the dual fluidizing effect of alcohol on the ethosomal lipid layers and on the stratum corneum lipids. Ethosomal formulation may contain many drugs such as acyclovir, salbutamol, Insulin, cyclosporine, fluconazole, minodixil, etc. These are prepared by hot method and cold methods. The size of Ethosomal formulation can be decreased by sonication and extrusion method. Ethosomes can act as a carrier for large and diverse group of drugs with different physicochemical properties and found a number of applications in pharmaceutical, biotechnological and cosmetic fields. Enhanced delivery of bioactive molecules through the skin and cellular membranes by means of an ethosomal carrier opens numerous challenges and opportunities for the research and future development of novel improved therapies.

Keywords: Ethosomes, Transdermal Drug Delivery, Controlled release

CARBON NANOTUBE: A REVIEW ON ITS MECHANICAL PROPERTIES AND APPLICATION

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ABSTRACT

Carbon Nanotubes (CNTs) represents one of the most unique inventions in the field of nanotechnology. Nanotubes are categorized as single-walled nanotubes and multiple walled nanotubes. The important aspects of CNTs are their light weight, small size with a high aspect ratio, good tensile strength, and good conducting characteristics, which make them useful as fillers in different materials such as polymers, metallic surfaces and ceramics. CNTs also have potential applications in the field of nanotechnology, nanomedicine, transistors, actuators, sensors, membranes, and capacitors. Different types of carbon nanotubes can be produced in various ways. The most common techniques used nowadays are: arc discharge, laser ablation and chemical vapour deposition. Without doubt, carbon nanotubes represent a material that offers great potential, bringing with it the possibility of breakthroughs in a new generation of devices, electric equipment and bio fields. Overall, recent studies regarding CNTs have shown a very promising glimpse of what lies ahead in the future of CNTs in nanotechnology and medicine.

Keywords: Carbon Nanotubes, Nanotechnology, Drug delivery

FORMULATION DEVELOPMENT OF NOVEL EXTENDED RELEASE MUCOADHESIVE BUCCAL PATCHES

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ABSTRACT

Mucoadhesive patches of Novel Extended Release were prepared using polyvinyl alcohol, hydroxyethyl cellulose and chitosan. Swelling and bioadhesive characteristics were indomitable for both plain and medicated patches. The consequences showed an increase in radial swelling after addition of drug to the plain formulation. A reduce in residual time observed for polyvinyl alcohol and chitosan containing formulae. High drug release was obtained from polyvinyl alcohol compared to the hydroxyethyl cellulose. Physical characteristics of the studied patches showed promising with good bioadhesion.

Keywords: Patches, Release, Novel

PRELIMINARY PHYTOCHEMICAL AND PHARMACOLOGICAL SCREENING OF *LENS CULINARIS* SEEDS

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ABSTRACT

Lens culinaris Med. (family: Fabaceae) is commonly known as "lentils". It is distributed and cultivated throughout the North region of India. Seeds are rich source of minerals such as calcium, iron, vitamin B and an important component of variety of food in many countries. The aim of present study was study preliminary phytochemical screening and pharmacological screening of *Lens culinaris*seeds extract for wound healing activity. The phytochemical analysis of ethanol extract was done for the detection of presence of different phytochemical constituents. Preliminary wound healing activity of ethanol extracts was tested by using excision wound model. Healing effect of ethanol extract of *Lens culinaris*seedswasinvestigated by measurement of percent contraction area, hydroxyproline estimation and epithelialization period. The phytochemical analysis reveals the presence of steroids, fixed oils, flavonoids, glycosides, polysachharides and proteins. Ethanol extractshowed significant wound healing effect by increasing wound contraction and significantly increase in hydroxyproline content of test group. The healing effect was compared with Povidone iodine ointment treated group of animals. In conclusion, the observation and results obtained in present study indicated that ethanol extract of *Lens culinaris*seedswas found improved skin healing may be due to presence of semi polar components like flavonoids.

Keywords: *Lens culinaris*, Wound healing, Povidone iodine, Hydroxyproline

EVALUATION OF *CARICA PAPAYA* EXTRACTS FOR ANTIMALARIAL ACTIVITY

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ABSTRACT

Present work was designed to evaluate different extracts of *Carica Papaya* leaves. For this, powdered plant material was successively extracted with various extracts such as petroleum ether, acetone, methanol and water. Obtained extracts were assessed phytochemically. *In vitro* antimalarial evaluation of plant extracts was done by using chloroquine-sensitive strains of plasmodium falciferum. Results concluded the existence of antimalarial compounds was detected in these plant extracts.

Keywords: Malaria, Extract, Acetone

ASSESSMENT OF APHRODISIAC ACTIVITY OF SOME INDIAN MEDICINAL PLANT EXTRACTS

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ABSTRACT

Male sexual dysfunction (MSD) could be caused by various factors. These include: psychological disorders, androgen deficiencies and chronic medical conditions. Ancient literature alluded to the use of a number of plants/preparations as sex enhancer. Present Investigation was designed to evaluate aphorodisiac activity of some medicinal plant extracts. These different extracts significantly decreased the body weight difference between day 1 and day28 and increased the weight of testes, vasdeferens, seminal vesicles. The improved sexual appetitive behavior in male rats may be accredited, to the alkaloids, saponins, and or flavonoids since these phytochemicals has enlargement, androgen enhancing. Also, present findings support the traditional use of medicinal plants as commended aphrodisiac and for the treatment of pre-ejaculation and impotency.

Keywords: Medicinal Plants, Phytochemical, Extracts, Impotency

RELEASE PROMOTER-BASED NANOCOMPOSITE(S): FOR SITE SPECIFIC DELIVERY OF IMMUNOBIOACTIVE(S)

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ABSTRACT

Vaccination is considered as one of the most significant achievements in medicine that plays an important role in preventing infectious diseases. Tumor immunotherapy or vaccines are an attractive alternative approach for the effective treatment of cancer. The purpose of present approach is to target C-Type lectin receptors (CTL) for the preferential internalization by themacrophages/dendritic cells and improving the presentation of ovalbumin by mannose decorated release promoter nanoliposomes and observing its combinatorial immunopotentiatory effect using C57BL/6 mice model. Conventional and engineered nanoliposomes (MPNLs) were fabricated and extensively characterized. The nanoliposome(s) was spherical in shape; and their PDI, size and ovalbumin loading efficiency were recorded to be 268±4.15 nm, 0.121±0.014, 46.65±1.84%, respectively. CTL receptor mediated internalization allows for quick and successive accumulation of OVA Ags for subsequent presentation of MHC through constitutive recycling; to enhance endocytosis and leading the processing and presentation of OVA antigen(s) in the association of both MHC class I and II molecules to CD4+or CD8+T lymphocytes. This combinatorial approach mannose surface modification for active targeting to dendritic cells/macrophages and pH dependent quick cytosolic OVA Ag release is a promising system for efficient cancer immunotherapy and can be further investigated for various types of new generation cancer immunotherapies.

EVALUATION OF HEMATOPOIETIC ACTIVITY OF VARIOUS EXTRACTS OF *PRUNUS DOMESTICA*

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ABSTRACT

This study was designed to investigate the Hematopoietic activity of various leaf extract of *Prunus Domestica* in Phenyl hydrazine-induced anaemia in albino wistar rats. The extracts were tested orally at 200 mg/kg and 400 mg/kg, given for 14 d. The degree of protection was determined by measuring the levels of hematological parameters such as: WBC, RBC, PCV and HB. Results obtained showed that both doses of the extract significantly ($p<0.05$) increased the values of all the hematological indices estimated, which included: total white blood cells, red blood cells, packed cell volume and hemoglobin. The activity of the extract was dose–dependent and comparable to that of that reference drug. The results thus suggest that *Prunus Domestica* may possess Hematopoietic activity. This finding supports the folkloric use of the leaves of this plant for prevention and treatment of anaemia.

Keywords: Anaemia, Prunus, WBC, PCV

ASSESSMENT OF ANTI-ANXIETY ACTIVITY OF *MIMOSA PUDICA* EXTRACTS

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ABSTRACT

Anxiety affects most of the population world-wide. The present investigation was assessed the chloroform and aqueous extracts of *Mimosa Pudica* for antianxiety activity. All crude extracts were subjected to antianxiety activity at the dose of 100 and 200 mg/kg. Results stated that methanolic extract exhibited significant antianxiety activity at the dose of 200 mg/kg with respect to control as well as standard. These results showed the potential of plant extract for the designed work.

Keywords: Methanol, Anxiety, Extracts, Control

FORMULATION AND *IN VITRO* EVALUATION OF FLOATING CAPSULE OF ANTACID DRUG

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ABSTRACT

An antacid is a substance which neutralizes stomach acidity, used to relieve heartburn, indigestion or an upset stomach. Antacids are over-the-counter medications that help neutralize stomach acid. Weak cation resins are interesting hydrophobic polymers for the taste masking of bitter drugs because of its complex forming ability, non toxicity and economy as compared to other methods. The aim of present study was to formulate Floating Capsule of Antacid Drug with different excipients and other materials. Formulated capsules were evaluated for disintegration test, weight variation, dissolution test, assay, Content uniformity, stability testing and moisture permeation test. Results concluded the acceptable limits of formulated capsules.

Keywords: Capsules, Variation, Assay, Uniformity

FORMULATION AND EVALUATION OF ENTERIC COATED TABLETS OF DOMPERIDONE WITH ACID IMPERMEABLE POLYMERS

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ABSTRACT

The aim of the present investigation was to prepare enteric coated tablets of Domperidone by using acid impermeable polymers. Enteric coated dosage forms, such as coated tablets have their firm place in the medical arsenal. The enteric coating of the tablets utilizes the pH differences of gastric pH 1-3 and intestinal pH 6-8. The prepared tablets were evaluated for hardness, weight variation, friability and drug content uniformity and it was found that the results comply with official standards. Stability studies indicated that the formulated tablets were stable and retained their pharmaceutical properties at room temperature.

Keywords: Formulation, Coating, Tablets

SYNTHESIS AND ANTIOXIDANT ACTIVITY OF SOME CONJUGATED CHALCONE DERIVATIVES

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ABSTRACT

Fifteen conjugated chalcone derivatives were synthesized and evaluated for their antioxidant activity. As speculated the synthesized compounds displayed moderate to good activity and in the structure-activity relationship (SAR) contemplated, the biological properties of these molecules were compared with a couple of theoretical parameters for instance, CLogP, PSA, ionization potential, sub-atomic weight, dissolvability, hydrogen bond acceptors (HBA) and hydrogen bond donors (HBD), drug-likeness, drug score using computational software.

Keywords: Chalcones, Derivatives, Antioxidant activity, SAR

DEVELOPMENT AND CHARACTERIZATION OF MOUTH DISSOLVING HYDROXYZINE HCL TABLET WITH EXCIPIENTS

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ABSTRACT

Oral dosage forms have been developed over the past three decades due to their extensive beneficial compensation such as ease of administration, patient compliance and flexibility in formulation. Mouth dissolving tablets disintegrates and dissolves rapidly in the saliva within a few seconds without the need of drinking water or chewing. Present work was intended to formulate the Mouth Dissolving tablets of Hydroxyzine HCL with some excipients. Formulated tablets were evaluated for disintegration, dissolution, weight variation, hardness and friability parameters. Results concluded that formulated tablets meet the required standards which make it pleasant and acceptable.

Keywords: Hydroxyzine, Formulation, Disintegration, Friability

Innopharm 3 Oral Presentation Schedule for Day 1 Room 1 (22nd October 2018)

PHARMACEUTICS, FORMULATION DEVELOPMENT, NDDS, REGULATORY AFFAIRS AND IPR | PHARMACEUTICAL/MEDICAL CHEMISTRY, ANALYSIS, SYNTHESIS AND MOLECULAR DRUG DESIGN

Day 1	Date: 22-Oct-18 Time: 1:30 PM to 04:15 PM					
Room 1	Pharmaceutics, Formulation Development, NDDS, Regulatory Affairs and IPR | Pharmaceutical/Medical Chemistry, Analysis, Synthesis and Molecular Drug Design					
S. No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**	**Duration**
11001	Speaker 1	Prof. Sarvesh Paliwal	Pharmaceutical/Medicinal Chemistry	India	G REPURPOSING USING VIRTUAL HIGH THROUGHPUT SCREENING: FROM MODELING TO REALITY	15 min
11002	Speaker 2	Dr. Prakash V diwan	Pharmaceutics	India	WONDERS AND WORRIES OF NANO MEDICINES IN HEALTH CARE	15 min
11101	20181033	Dr. Nagasamy Venkatesh D.	Pharmaceutics	India	FABRICATION AND EVALUATION OF RITONAVIR CONTROLLED RELEASE TABLETS FOR EFFECTIVE ANTI-HIV THERAPY	10 min
11102	20181079	Mrs. Gita Chaurasia	Pharmaceutics	India	A MIRACULOUS NANOMEDICINE: NANOROBOTICS	10 min
11103	20181094	Dr. Nilesh Mahajan	Pharmaceutics	India	DESIGN AND DEVELOPMENT OF ROBOTIC JAW FOR THE IN-VITRO DISSOLUTION TESTING OF MEDICATED CHEWING GUM	10 min
11104	20181109	Mrs. Foziyah Zakir	Pharmaceutics	India	DESIGN AND DEVELOPMENT OF TRANSGEL NANOFORMULATION FOR THE TREATMENT OF OSTEOPOROSIS	10 min
11105	20181110	Dr. Zeenat Iqbal	Pharmaceutics	India	DEVELOPMENT OF TRANSDERMAL NANOGEL FORMULATION FOR THE TREATMENT OF ARTHRITIS	10 min
11106	20181112	Dr. Prashant Pingale	Pharmaceutics	India	COMPARATIVE STUDY OF HERBAL EXTRACT OF PIPER NIGRUM, PIPER ALBUM AND PIPER LONGUM ON VARIOUS CHARACTERISTICS OF ISONIAZID AND RIFAMPICIN MICROSPHERES	10 min
11107	20181200	Dr. Beny Baby	Pharmaceutics	India	ADVANCES IN ORAL PROLONGED DELIVERY OF METFORMIN HCL USING NANOPARTICLES AS CARRIERS TO TREAT TYPE 2 DIABETES MELLITUS	10 min
11108	20181202	Mrs. Rashmi Mathews	Pharmaceutics	India	A LIQUID ORAL IN SITU GELLING SYSTEM OF A SYSTEMIC ANTIFUNGAL FOR SUSTAINED RELEASE: STATISTICAL DESIGN, DEVELOPMENT AND EVALUATION	10 min
11109	20181211	Miss Rajkumari Thagele	Pharmaceutics	India	CHITOSAN NANOPARTICLES ENHANCES THE CYTOTOXIC EFFECTS OF TAMOXIFEN IN BREAST CANCER CELLS	10 min
11110	20181227	Miss Roma Trivedi	Pharmaceutics	India	INHALABLE PULMONARY STRATEGY FOR EFFECTIVE DELIVERY OF SYNERGISTIC DRUG COMBINATION IN COMBATING TUBERCULOSIS	10 min
11111	20181282	Miss Mokshada Utikar	Pharmaceutics	India	STANDARDIZATION, FORMULATION DEVELOPMENT AND CHARACTERIZATION ANTIULCER DRUG	10 min
11112	20181285	Mr. Muthu S	Pharmaceutics	India	FORMULATION AND EVALUATION OF HYDRALAZINE HYDROCHLORIDE BUCCAL FILMS BY SOLVENT CASTING METHOD USING DIFFERENT POLYMERS FOR THE MANAGEMENT OF PREGNANCY INDUCED HYPERTENSION	10 min
11113	20181067	Mr. Ziyaul Haque Momin	Pharmaceutical/Medicinal Chemistry	India	DOCKING AND DEVELOPMENT OF HIGHLY PREDICTIVE 3D-QSAR KNN-MFA MODELS FOR IMIDAZOPYRIDINE DERIVATIVES AS AN ANTI-CANCER AGENT	10 min
11114	20181108	Dr. Pallavi Patil	Pharmaceutical/Medicinal Chemistry	India	DEVELOPMENT AND VALIDATION OF SIMPLE RP-HPLC ANALYTICAL METHOD FOR BOSUTINIB ASSISTED WITH DESIGN OF EXPERIMENTS FOR ROBUSTNESS DETERMINATION	10 min
11115	20181136	Dr. Tamanna Narsinghani	Pharmaceutical/Medicinal Chemistry	India	MICROWAVE-ASSISTED SYNTHESIS AND EVALUATION OF SOME CHALCONE DERIVATIVES AS ANTI-OXIDANT AGENTS	10 min

11116	20181163	Dr. Shilpa Harak	Pharmaceutical/Medicinal Chemistry	India	HOMOLOGY MODELING OF 14-ALPHA LANOSTEROL DEMETHYLASE	10 min
11117	20181237	Dr. Aditi Singh	Pharmaceutical/Medicinal Chemistry	India	PREDICTING IN SILICO THE POTENTIAL OF ACTIVE COMPOUNDS FROM ALOE VERA FOR THEIR ANTI-CANCER ACTIVITY	10 min
11118	Offline	Kamlesh Mankuskar	Pharmaceutical Chemistry	India	KINETIC SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF LISINOPRIL BY CONDENSATION REACTION	10 min

Innopharm 3 Oral Presentation Schedule for Day 1 Room 2 (22nd October 2018)

NATURAL DRUG RESEARCH, PHARMACOGNOSY, PHYTOMEDICINE AND BIOTECHNOLOGY | BIOCHEMISTRY, MICROBIOLOGY, CELL BIOLOGY AND MISCELLANEOUS

Day 1	Date: 22-Oct-18 Time: 1:30 PM to 04:15 PM					
Room 2	Natural Drug Research, Pharmacognosy, Phytomedicine and Biotechnology | Biochemistry, Microbiology, Cell Biology and Miscellaneous					
S. No.	Reg. No.	Name	Section	Affiliation	Abstract Title	Duration
12001	Speaker 1	Saneesh Kumar	Natural Drug Research	South Africa	INVESTIGATION OF AFRICAN MEDICINAL PLANTS – PHYTOCHEMICAL ANALYSIS, PHARMACOKINETIC HERB-DRUG INTERACTIONS INVOLVING TRADITIONAL HERBAL MEDICINES & CYTOCHROME P450 ENZYMES – IN VITRO METABOLISM, MRNA EXPRESSION & PHYTOCHEMICAL FINGERPRINTING STUDIES	15 min
12002	Speaker 2	Melika Nazemi	Natural Drug Research	Iran	BIOLOGICAL ACTIVITIES OF MARINE SPONGES FROM PERSIAN GULF. A REVIEW	15 min
12101	20181017	Dr. Prakash Kumar B	Natural Drug Research	India	MECHANISM OF ACTION OF AYURVEDIC MEDICINE IN INHIBITION OF PRO INFLAMMATORY CYTOKINE PRODUCTION	10 min
12102	20181044	Mr. Jayanta Maji	Natural Drug Research	India	APPLICATION OF FACTORIAL DESIGN FOR VALIDATION OF HIGH-PERFORMANCE THIN LAYER CHROMATOGRAPHY METHOD FOR ROBUSTNESS DETERMINATION OF PHENOLIC ACIDS (GALLIC ACID, FERULIC ACID, CHLOROGENIC ACID AND CAFFEIC ACID) IN SELECTED INDIAN BAMBOO SPECIES	10 min
12103	20181186	Mr. Rudra Singh	Natural Drug Research	India	FORMULATION AND EVALUATION OF PHYTOSOME LOADED DRUG DELIVERY OF GINGEROL FOR THE TREATMENT OF RESPIRATORY INFECTION	10 min
12104	20181228	Mrs. Teena Merlin	Natural Drug Research	India	KOKILAKSHAM KASHAYAM, AN AYURVEDIC HERBAL PREPARATION IS AN INHIBITOR OF PRO-INFLAMMATORY CYTOKINES AND NO IN THP 1 DERIVED MACROPHAGES	10 min
12105	20181248	Mrs. Vigi Chaudhary	Natural Drug Research	India	EVALUATION OF ANTIBACTERIAL EFFICACY OF TRIPHALA ON UROPATHOGENS	10 min
12106	20181335	Mrs. Ahlam Abdul Aziz	Natural Drug Research	India	GENOMIC LEVEL INTERACTION OF BIOGENIC ZINC OXIDE NANOSTRUCTURES ON PROKARYOTIC AND EUKARYOTIC CELL SYSTEMS	10 min
12107	20181352	Mrs. Liesl Fernandes	Natural Drug Research	India	COMPARATIVE ANALYSIS OF THE IN VITRO ANTIOXIDANT POTENTIAL OF ETHANOLIC EXTRACTS OF HYBANTHUS ENNEASPERMUS LINN. AND BAUHINIA FOVEOLATA DALZELL - TWO INDIGENOUS PLANTS OF THE WESTERN GHATS OF INDIA.	10 min
12108	20181370	Mr. Aditya Ganeshpurkar	Natural Drug Research	India	MODULATORY EFFECT OF HESPERIDIN ON HUMORAL AND CELL MEDIATED IMMUNITY	10 min
12109	20181638	Kavita Munjal	Natural Drug Research	India	ISOLATION AND CHARACTERISATION OF PHYTOCONSTITUENTS FROM ALPINIA GALANGA RHIZOMES AND GARCINIA INDICA FRUITS	10 min
12110	20181078	Mr. Rahul Patil	Miscellaneous	India	ANTIGLYCATING BIO-ACTIVES AND PROBIOTICS SYNERGISTICALLY IMPROVES PRE-DIABETIC CONDITION	10 min
12111	20181175	Mr. Md Raza	Miscellaneous	India	APPLICATION OF REAL TIME PCR IN THE DIAGNOSIS OF NEONATAL	10 min

					ACUTE BACTERIAL MENINGITIS IN A TERTIARY HEALTH CARE CENTER IN INDIA	
12112	Offline	Dr. Alok Kumar Shukla	Natrual Product Research	India	FUTURE OF HERBAL COSMETICS	10 min
12113	Offline	Shashank Bhatt	Natrual Product Research	India	DETERMINATION OF METABOLITES QUANTITY AND ANTIMICROBIAL ACTIVITY IN BARK OF ZIZIPHUS MAURITIANA PLANT	10 min

Innopharm 3 Oral Presentation Schedule for Day 1 Room 3 (22nd October 2018)

PHARMACOLOGY, PHARMACY PRACTICE AND PHARMACOVIGILANCE | PRECLINICAL AND CLINICAL RESEARCH INCLUDING CASE STUDIES

Day 1	Date: 22-Oct-18 Time: 1:30 PM to 04:15 PM					
Room 3	Pharmacology, Pharmacy Practice and Pharmacovigilance | Preclinical and Clinical Research Including Case Studies					
S. No.	Reg. No.	Name	Section	Affiliation	Abstract Title	Duration
13001	Speaker 1	Dr. Hemant Kumar Jain	Pharmacology	India	EFFECT OF CHALANA KRIYAS, YOGASANA, KAPALABHATI, PRANYAMA, SURYA NAMASKAR, MEDITATION IN MANAGEMENT OF HYPERGLYCEMIA	15 min
13101	20181024	Mr. Shravan Paswan	Pharmacology	India	PRECLINICAL TOXICOLOGICAL EVALUATION (ACUTE, SUB ACUTE TOXICITY) OF STANDARDIZED PLANT EXTRACTS SELAGINELLA BRYOPTERIS ON WISTAR RATS	10 min
13102	20181025	Mrs. Pritt Verma	Pharmacology	India	HEPATOPROTECTIVE AND TOXICOLOGICAL ASSESSMENT OF AN ETHNOMEDICINAL PLANT HOLARRHENA ANTIDYSENTERICA L.	10 min
13103	20181061	Mr. Abhishek Kumar Jha	Pharmacology	India	EFFECT OF ORYZA SATIVA PHYTOCHEMICALS ON ALZHEIMERÃ¢Â,¬Â„¢S DISEASE	10 min
13104	20181066	Dr. Rohini Gupta	Pharmacology	India	TO STUDY THE PRESCRIBING PATTERN OF HYPOLIPIDEMIC AGENTS IN A TERTIARY CARE TEACHING HOSPITAL IN NORTH INDIA-AN OBSERVATIONAL STUDY	10 min
13105	20181090	Dr. Neethu T T	Pharmacology	India	EFFECT OF ANTICONVULSANT DRUGS ON THYROID STIMULATING HORMONE	10 min
13106	20181104	Dr. Doorva Bhat	Pharmacology	India	PATIENT OUTLOOK AND PRACTICE IN IRON DEFICIENCY ANEMIA: A PROSPECTIVE OBSERVATIONAL QUESTIONNAIRE BASED STUDY	10 min
13107	20181113	Dr. Rupali Patil	Pharmacology	India	PROTECTIVE EFFECT OF CITRULLUS LANATUS SEEDS AGAINST RHABDOMYOLYSIS-INDUCED MYOGLOBINURIC ACUTE RENAL FAILURE	10 min
13108	20181157	Dr. Divyashree Ramesh	Pharmacology	India	A PROSPECTIVE OBSERVATIONAL STUDY ON DRUG UTILIZATION PATTERN IN MEDICAL INTENSIVE CARE UNIT OF A TERTIARY MEDICAL CARE HOSPITAL	10 min
13109	20181169	Dr. Sailaja Rao	Pharmacology	India	CARDIOVASCULAR COMPLICATIONS IN STREPTOZOTOCIN INDUCED DIABETIC RATS AND POTENTIAL INFLUENCE OF BETA BLOCKERS	10 min
13110	20181217	Mr. Manan Shah	Pharmacology	India	DROSPIRENONE INDUCED GALL BLADDER DISEASES: A RETROSPECTIVE STUDY OF EUDRAVIGILANCE DATABASE	10 min
13111	20181222	Miss Satya Gollapalli	Pharmacology	India	EFFECTIVENESS OF BUPIVACAINE AS SPINAL ANAESTHETIC AND FENTANYL/DICLOFENAC AS POST ANALGESIC IN PATIENTS UNDERGOING MICROENDOSCOPIC DISCECTOMY	10 min
13112	20181295	Mrs. Lavanya Vivekanandh	Pharmacology	India	IMPACT OF CLINICAL PHARMACIST INTERVENTION ON HYPERTENSIVE WOMEN AND PATIENT OUTCOMES AT A TERTIARY CARE HOSPITAL	10 min
13113	20181226	Dr. Samir Haj Bloukh	Pharmacology	UAE	DOT-ELISA OR THIN LAYER IMMUNOASSAY AND RUBELLA ANTIGEN	10 min
13114	20181218	Dr. Sahana G N	Pharmacology	India	COMPARATIVE STUDY ON EFFICACY OF FLUTICASONE ALONE AND FLUTICASONE WITH AZELASTINE NASAL SPRAY IN ALLERGIC RHINITIS	10 min
13115	20181184	Dr. Ruchika Kalra	Clinical Research	India	EVALUATION OF ANTI-SEIZURE ACTIVITY OF SIDA RHOMBIFOLIA ALONE AND IN COMBINATION WITH ANTI-SEIZURE DRUGS IN SWISS ALBINO MICE	10 min
13116	20181304	Dr. Onkar Kakare	Clinical Research	India	NON-INVASIVE SCORING SYSTEMS FOR HEPATIC FIBROSIS IN USG DIAGNOSED NAFLD IN TYPE2 DM	10 min
13117	20181312	Dr. Avani Patil	Clinical Research	India	A COMPARATIVE STUDY BETWEEN EFFICACY OF CYCLOSPORINE 0.1% AND REBAMIPIDE 2% EYE DROPS IN MODERATE TO SEVERE DRY EYE CASES.	10 min

Innopharm 3 Oral Presentation Schedule for Day 2 Room 1 (23rd October 2018)

PHARMACEUTICS, FORMULATION DEVELOPMENT, NDDS, REGULATORY AFFAIRS AND IPR | PHARMACEUTICAL/MEDICAL CHEMISTRY, ANALYSIS, SYNTHESIS AND MOLECULAR DRUG DESIGN

Day 2	Date: 23-Oct-18 Time: 10:15 AM to 01:00 PM					
Room 1	Pharmaceutics, Formulation Development, NDDS, Regulatory Affairs and IPR | Pharmaceutical/Medical Chemistry, Analysis, Synthesis and Molecular Drug Design					
S. No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**	**Duration**
21001	Speaker 1	Dr. Hitendrakumar Patel	Pharmaceutical/Medicinal Chemistry	India	SYNTHESIS OF HETEROCYCLIC COMPOUNDS VIA MULTI-COMPONENT REACTIONS: THEIR MICROBIAL STUDIES AND ANTIPROLIFERATIVE ON HUMAN LUNG CANCER CELLS A549	15 min
21101	20181321	Mr. Aishwary Joshi	Pharmaceutics	India	DESIGN AND CHARACTERIZATION OF D-LIMONENE AND LIQUORICE LOADED NANOSPONGE BASED DRUG DELIVERY SYSTEM FOR COMPLETE ERADICATION OF H.PYLORI INFECTION	10 min
21102	20181324	Miss Abinaya M	Pharmaceutics	India	DEVELOPMENT OF METADOXINE LIPID MICROSPHERES FOR ALCOHOL INTOXICATION	10 min
21103	20181328	Mrs. Gayathri R	Pharmaceutics	India	ASSESSMENT OF ARAUCARIA HETEROPHYLLA GUM AS SUSPENDING AGENT IN THE FORMULATION OF SUSPENSION	10 min
21104	20181339	Miss Shamal Bhosale	Pharmaceutics	India	FORMULATION AND EVALUATION OF AN ANTIMICROBIAL MUCOADHESIVE DENTAL GEL	10 min
21105	20181378	Dr. Arvind Gulbake	Pharmaceutics	India	MANNOSYLATED MULTIWALLED CARBON NANOTUBES ASSISTED ARTESUNATE DELIVERY FOR CEREBRAL MALARIA	10 min
21106	20181443	Miss Akanksha Ugale	Pharmaceutics	India	A STUDY ON TOPICAL FORMULATION OF SYZYGIUM AROMATICUM OIL FOR ANTIBACTERIAL ACTIVITY	10 min
21107	20181479	Miss Satinder Kakar	Pharmaceutics	India	MAGNETIC MICROSPHERES	10 min
21108	20181482	Miss Anju Kashyap	Pharmaceutics	India	ANALYTICAL METHOD DEVELOPMENT AND VALIDATION STUDIES FOR THE ESTIMATION OF GEMCITABINE HYDROCHLORIDE IN THE DEVELOPED NIOSOMES.	10 min
21109	20181551	Dr. Natalia Volovyk	Pharmaceutics	Ukraine	DEVELOPMENT OF A PROCEDURE FOR PERSONNEL QUALIFICATION BY UV-VIS SPECTROPHOTOMETRY	10 min
21110	20181573	Mrs. Pearl Dighe	Pharmaceutics	India	STATISTICAL OPTIMISATION AND FABRICATION OF BILAYER TABLET IN THE MANAGEMENT OF PULMONARY ARTERIAL HYPERTENSION: DEVELOPMENT AND CHARACTERIZATION	10 min
21111	20181580	Miss Suwarna Bobde	Pharmaceutics	India	DESIGN AND EVALUATION OF RAMOSETRON HYDROCHLORIDE MOUTH DISSOLVING FILM	10 min
21112	20181616	Mr. Dattatraya Shinkar	Pharmaceutics	India	DEVELOPMENT AND EVALUATION OF MUCOADHESIVE BUCCAL TABLET OF NEBIVOLOL HCL	10 min
21113	20181619	Dr. Prashant Malpure	Pharmaceutics	India	FORMULATION AND EVALUATION OF ALOE VERA BASED HYDROGEL FOR TREATMENT OF BURNS	10 min
21114	20181620	Dr. Avish Maru	Pharmaceutics	India	FORMULATION AND EVALUATION OF OINTMENT CONTAINING SUNFLOWER WAX	10 min
21115	20181055	Dr. Hanan Kassab	Pharmaceutics	Iraq	PREPARATION AND IN VITRO EVALUATION OF NAPROXEN AS A PH SENSITIVE OCULAR IN- SITU GEL	10 min
21116	20181263	Mr. Adison Fernandes	Pharmaceutical/Medicinal Chemistry	India	DEVELOPMENT AND VALIDATION OF STABILITY INDICATING RP-HPLC ASSAY METHOD FOR MEFENAMIC ACID	10 min
21117	20181350	Miss Prachi Raikar	Pharmaceutical/Medicinal Chemistry	India	ENANTIOMERIC SEPARATION OF OXOMEMAZINE DRUG PRODUCT AND ITS PHARMACEUTICAL DOSAGE FORM ON AMYLOSE TRIS (5-CHLORO-2-METHYLPHENYLCARBAMATE) COLUMN	10 min
21118	20181351	Mr. Maruthi R	Pharmaceutical/Medicinal	India	SIMULTANEOUS ESTIMATION AND ANALYTICAL METHOD	10 min

			Chemistry		DEVELOPMENT, VALIDATION FOR THE TENELIGLIPTIN AND METFORMIN BY RP-UFLC	
21119	20181478	Mr. Kashif Haider	Pharmaceutical/Medicinal Chemistry	India	MOLECULAR DOCKING STUDIES AND NOVEL SYNTHETIC APPROACH FOR PROCESS DEVELOPMENT AND OPTIMIZATION OF PONATINIB: A POTENT BCR-ABL KINASE INHIBITOR.	10 min
21120	20181480	Miss Nishtha	Pharmaceutical/Medicinal Chemistry	India	SYNTHESIS AND BIOLOGICAL SCREENING OF SOME POTENTIAL COMPOUNDS AS PROMISING AGENTS AGAINST CANCER	10 min
21121	Offline	Chirag Shrivastava	Pharmaceutical Chemistry	India	KINETIC SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF LISINOPRIL BY CONDENSATION REACTION	10 min
21122	Offline	Adarsh Parashar	Pharmaceutics	India	DEVOLPMENT AND CHARACTERIZATION OF MANNOSYLATED MULTIWALLED CARBON NANOTUBES FOR THE TARGETTING OF LUNG CANCER	10 min
21123	20181590	Shilpa Bhilegaonkar	Pharmaceutics	India	NOVEL ROLL - ON FORMULATIONS FOR TREATMENT OF ONYCHOMYCOSIS	10 min

Innopharm 3 Oral Presentation Schedule for Day 2 Room 2 (23rd October 2018)

NATURAL DRUG RESEARCH, PHARMACOGNOSY, PHYTOMEDICINE AND BIOTECHNOLOGY | BIOCHEMISTRY, MICROBIOLOGY, CELL BIOLOGY AND MISCELLANEOUS

Day 2	**Date: 23-Oct-18 Time: 10:15 AM to 01:00 PM**					
Room 2	**Natural Drug Research, Pharmacognosy, Phytomedicine and Biotechnology | Biochemistry, Microbiology, Cell Biology and Miscellaneous**					
S. No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**	**Duration**
22001	Speaker 1	Bakrudeen Ali Ahmed	Natural Drug Research	Vietnam	SECONDARY METABOLITES PRODUCTION: PHARMACEUTICAL INDUSTRY	15 min
22101	20181296	Dr. Bhaskar Nagilla	Natural Drug Research	India	GLUCOSE METABOLISM AND CYCLOOXYGENASE ACTIVITY IN BRAIN OF STZ INDUCED DIABETIC RATS TREATED WITH CURCUMIN.	10 min
22102	20181393	Dr. Erwin Faller	Natural Drug Research	Malaysia	A NOVEL CHITOSAN-LOADED BACTERIOPHAGE ANTIBACTERIAL GEL AGAINST FUSOBACTERIUM ULCERANS FOR TROPICAL SKIN ULCER TREATMENT	10 min
22103	20181405	Miss Taihaseen Momin	Natural Drug Research	India	DEVELOPMENT OF DRUG AND SIRNA LOADED SURFACE MODIFIED CHITOSAN NANOPARTICLE FOR COLORECTAL CANCER TREATMENT	10 min
22104	20181427	Dr. Narendra Ankem	Natural Drug Research	India	NEUROPROTECTIVE EFFECT OF JUSTICIA ADHATODA LINN LEAF EXTRACT AGAINST STREPTOZOCIN INDUCED NEUROTOXICITY IN RATS	10 min
22105	20181466	Dr. Ravikiran T	Natural Drug Research	India	DECALEPIS HAMILTONII AMELIORATES H2O2-INDUCED OXIDATIVE STRESS AND APOPTOSIS IN H9C2 CELLS	10 min
22106	20181475	Dr. Raveesha Hr	Natural Drug Research	India	STUDIES ON IN VITRO REGENERATION, ANTIBACTERIAL AND PHYTOCHEMICAL SCREENING OF NOTHAPODYTES NIMMONIANA (GRAHAM) MABB.	10 min
22107	20181515	Mrs. Rajashree Gude	Natural Drug Research	India	CYTOTOXIC EFFECT ON CANCEROUS CELL LINES BY BIOLOGICALLY SYNTHESIZED SILVER NANOPARTICLES OF APHANAMIXIS POLYSTACHYA	10 min
22108	20181232	Dr. Amita Shobha Rao	Miscellaneous	India	STUDY ON PRESENCE OF PATHOGENIC BACTERIA IN SERVING CUTLERIES FROM FOOD OUTLETS IN AND AROUND MANIPAL	10 min
22109	20181236	Dr. Shobha K.L	Miscellaneous	India	SCREENING OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS CARRIERS AMONG FOOD HANDLERS.	10 min
22110	20181336	Mr. Diwan Khan	Miscellaneous	India	PREVALENCE OF ESBL AND NON-ESBL ENCODING GENES IN ACINETOBACTER BAUMANNII STRAINS ISOLATED FROM PATIENTS OF DIABETIC FOOT ULCER INFECTION	10 min
22111	Offline	Dr. Shashank Bhatt	Natrual Product Research	India	THE ENVIRONMENTAL CONDITIONS GENERATE QUANTITY VARIATION IN SOLUBLE PROTEINS OF AILANTHUS EXCELSA ROXB LEAVES	10 min
22112	Offline	Sanket Bhandare	Natrual Product Research	India	STEVIA: A ZERO CALORIE PLANT–BIO-SWEETENER OF THE FUTURE	10 min
22113	Offline	Prakash Das	Natrual Product Research	India	SEASONAL EXAMINATION OF PHYSIOCHEMICAL PARAMETERS OF TWO FRESH WATER RESERVOIRS AT MANDSAUR, M. P (INDIA)	10 min

Innopharm 3 Oral Presentation Schedule for Day 2 Room 3 (23rd October 2018)

PHARMACOLOGY, PHARMACY PRACTICE AND PHARMACOVIGILANCE | PRECLINICAL AND CLINICAL RESEARCH INCLUDING CASE STUDIES

Day 2	Date: 23-Oct-18 Time: 10:15 AM to 01:00 PM					
Room 3	Pharmacology, Pharmacy Practice and Pharmacovigilance | Preclinical and Clinical Research Including Case Studies					
S. No.	Reg. No.	Name	Section	Affiliation	Abstract Title	Duration
23001	Speaker 1			India		15 min
23101	20181305	Mr. Vivik Sinha	Pharmacology	India	PHARMACOVIGILANCE PROGRAMME OF INDIA	10 min
23102	20181313	Dr. Kamlesh Garg	Pharmacology	India	RECENT GUIDELINES FOR MANAGEMENT OF TUBERCULOSIS IN INDIA	10 min
23103	20181347	Miss Mohan Kumari L Lokesh	Pharmacology	India	EVALUATION OF AMIODARONE USE IN CARDIOLOGY DEPARTMENT AT A TERTIARY CARE HOSPITAL, BANGALORE, KARNATAKA	10 min
23104	20181355	Dr. Namit Kamble	Pharmacology	India	IMPACT OF CLINICAL PHARMACIST LEAD COLLABORATIVE ASSESSMENT IN QUALITY OF LIFE THROUGH SF-36 QUESTIONNAIRE IN PATIENTS WITH SCHIZOPHRENIA ON ATYPICAL ANTIPSYCHOTICS.	10 min
23105	20181356	Dr. Dhanashree Sangaokar	Pharmacology	India	ADAPTATION OF VALIDATED TOOL QUESTIONNAIRE IN SCHIZOPHRENIA PATIENTÃ¢Â,¬Â„¢S ADHERENT ON ATYPICAL ANTI-PSYCHOTICS AT TERTIARY CARE HOSPITAL	10 min
23106	20181368	Miss Sodum Nalini	Pharmacology	India	STEM CELLS THERAPY AS A NOVEL TOOL FOR WOUND MANAGEMENT IN DIABETIC ULCER-A REVIEW	10 min
23107	20181377	Dr. Kiran Nilugal	Pharmacology	Malaysia	KNOWLEDGE, ATTITUDE AND PERCEPTION OF THE MISUSE AND ABUSE OF OVER THE COUNTER (OTC) MEDICINES AMONG THE STUDENTS OF MANAGEMENT AND SCIENCE UNIVERSITY (MSU)	10 min
23108	20181388	Dr. Abhimanyu Prashar	Pharmacology	India	IMPORTANCE OF POISON INFORMATION CENTRE IN ASSISTING HEALTHCARE PRACTITIONERS AND GENERAL PUBLIC	10 min
23109	20181456	Miss Jagadeeswari P	Pharmacology	India	ANTIHYPERALGESIC AND ANTI-INFLAMMATORY EFFECTS OF TELMISARTAN AGAINST CHRONIC CONSTRICTION INJURY INDUCED NEUROPATHIC PAIN IN RATS	10 min
23110	20181533	Miss Narahari Rishitha	Pharmacology	India	THERAPEUTIC INVESTIGATION OF BAICALIN FLAVONOID IN FOUR VESSELS OCCLUSION INDUCED VASCULAR DEMENTIA IN RATS	10 min
23111	20181581	Dr. Natarajan Ashokkumar	Pharmacology	India	ANTIHYPERLIPIDEMIC EFFECTS OF 7-METHOXY COUMARIN ON STREPTOZOTOCIN INDUCED CHANGES IN EXPERIMENTAL RATS.	10 min
23112	20181582	Mr. Mangirish Deshpande	Pharmacology	India	MOLECULAR DOCKING STUDIES AND IN VITRO H+ K+ ATPASE ACTIVITY OF ISOLATED FLAVANOID FROM PHYLLANTHUS URINARIA	10 min
23113	20181615	Dr. Mayank Dhore	Pharmacology	India	A SURVEY ON THE KNOWLEDGE, ATTITUDE, PERCEPTIONS AND PRACTICES RELATED TO ANTIBIOTIC USE AND RESISTANCE IN THE POSTGRADUATE STUDENTS IN TERTIARY CARE CENTER/HOSPITAL	10 min
23114	20181363	Dr. Saurabh Thanekar	Clinical Research	India	USE OF CAT SCORE & IT'S CORRELATION WITH SPIROMETRY IN STABLE COPD PATIENTS	10 min
23115	20181412	Dr. May Florence Bacayo	Clinical Research	Malaysia	PHARMACIST'S PERCEPTION ON ELECTRONIC CIGARETTES: A QUANTITATIVE STUDY OF THE COMMUNITY PHARMACIES IN SELANGOR	10 min
23116	20181420	Dr. Udayan Saha	Clinical Research	India	A STUDY OF LEFT ATRIAL VOLUME INDEX IN PATIENTS OF ANTERIOR WALL MYOCARDIAL INFARCTION AS A SHORT TERM PROGNOSTIC INDICATOR.	10 min
23117	Offline	Anand Andhare	Pharmacology	India	5 S: AN EFFECTIVE WORKPLACE MANAGEMENT SYSTEM	10 min

Innopharm 3 Poster Presentation Schedule for Day 1 (22nd October 2018)

Day 1	Date: 22-Oct-18 Time: 4:15 PM to 05:30 PM				
Poster No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**
12001	20181201	Mrs. Shibi Thomas	Clinical Research	India	EVALUATION OF PRESCRIPTION AUDITING AND PATIENT COUNSELLING ON CKD PATIENTS IN TERTIARY CARE HOSPITAL
12002	20181318	Dr. Shruthi Rammohan	Clinical Research	India	THE EFFICACY OF VITAMIN C ON HEMOGLOBIN LEVELS AND WHITE BLOOD CELL COUNT AS AN ADJUVANT IN THE TREATMENT OF DENGUE FEVER
12003	20181401	Mr. Shubham Jain	Clinical Research	India	OPTIMIZATION OF CLINICAL TRIALS USING BANDITS ALGORITHM
12004	20181060	Dr. Moyad Shahwan	Miscellaneous	UAE	KNOWLEDGE AND AWARENESS OF DENTAL CARE PROVIDERS TOWARDS ATTENTION DEFICIT HYPERACTIVITY DISORDER
12005	20181359	Miss Reona Fernandes	Miscellaneous	India	ARTIFICIAL SWEETENERS:LEAVING BEHIND BITTER EFFECT ON GUT MICORBIOTA
12006	20181360	Mr. Soumith Paritala	Miscellaneous	India	ANTIBIOTICS AND GUT MICROBIOTA
12007	20181031	Mr. Akriti Singh	Natural Drug Research	India	EFFECT OF BOMBAX CEIBA BARK AND SEEDS POWDER ON ALLOXAN INDUCED DIABETIC RATS AS AN ANTI-DIABETIC AND OXIDATIVE STRESS MITIGATING AGENTS
12008	20181039	Mr. Venkatesh Kamath	Natural Drug Research	India	OPTIMIZATION OF PROCESS VARIABLES USING SURFACE RESPONSE METHODOLOGY ON PRODUCTION OF L-ASPARAGINASE FROM STREPTOMYCES ALBOGRISEOLUS
12009	20181084	Mr. Shashi Kumara	Natural Drug Research	India	CHARACTERISATION OF SARAKA ASOCA FLOWER (ROXB.) WILDE WITH ITS LEARNING AND MEMORY ENHANCING ACTIVITY IN EXPERIMENTAL MICE.
12010	20181091	Mrs. Sharmila Chandran	Natural Drug Research	India	DEXTRAN SULFATE STABILIZED SILVER NANOPARTICLE: NEXT GENERATION EFFICIENT THERAPY FOR CANCER
12011	20181095	Dr. Ashoka Babu Vl	Natural Drug Research	India	PRODUCTION OF BETALAINES FROM HAIRY ROOT CULTURE OF BETA VULGARIS AND ITS USE IN PARACETAMOL SYRUP AS A NATURAL COLOURANT
12012	20181121	Mrs. Smita Puri	Natural Drug Research	India	HEPATOPROTECTIVE ACTIVITY OF ENDOPHYTIC FUNGAL FRACTIONS OF PHYLLANTHUS AMARUS SCHUM. & THONN. LEAVES AGAINST CARBON TETRACHLORIDE INTOXICATION IN RATS
12013	20181122	Mr. Sagar Grover	Natural Drug Research	India	EVALUATION OF ANTI-DIABETIC PROPERTIES OF SELECTED MEDICINAL PLANTS
12014	20181131	Dr. Sundara Saravanan Kamatchi	Natural Drug Research	India	ANTIDIABETIC ACTIVITY OF BAUHINIA VAHLII WT. & ARN. (CAESALPINIACEAE) ROOT Ã¢Â‚¬Â€Œ A BOTANICAL SOURCE FOR THE AYURVEDA DRUG MURVA
12015	20181155	Dr. Gowri Radhakrishnan	Natural Drug Research	India	ANTIDIABETIC ACTIVITY OF SPHAERANTHUS AMARANTHOIDES BURM.F. ROOT IN ALLOXAN INDUCED DIABETIC RATS - A COMPARATIVE STUDY WITH THE ACCEPTED SOURCE S.INDICUS
12016	20181167	Miss Priyatama Powar	Natural Drug Research	India	FORMULATION AND EVALIUATION OF POLYHERBAL GEL BASED FACIAL PEEL- OFF MASK: REMEDIAL AGENTS FOR SKIN BACTERIAL INFECTION
12017	20181212	Miss Nargis Khan	Natural Drug Research	India	MORPHOLOGICAL BIOCHEMICAL AND MOLECULAR CHARACTERISATION OF GN.COT-25 (GOSSYPIUM HERBACEUM L.) UNDER SALT STRESS
12018	20181230	Miss Khushboo Jethva	Natural Drug Research	India	ASSESSMENT OF THE ANTI-TUBERCULAR ACTIVITY OF SELECTED INDIAN MEDICINAL PLANTS
12019	20181231	Miss Dhara Bhatt	Natural Drug Research	India	EVALUATION OF ANTI- CANCER POTENTIAL OF EULOPHIA NUDA USING DIFFERENT CANCER CELL LINES
12020	20181250	Mr. Kamlendra Maurya	Natural Drug Research	India	ANTIOXIDANT ACTIVITY OF COMPOUND ISOLATED FROM GYMNEMA SYLVESTRE
12021	20181267	Miss Keruli Desai	Natural Drug Research	India	QSAR STUDY OF NITROPHENYL DERIVATIVES AS ALDOSE REDUCTASE INHIBITOR
12022	20181268	Miss Pooja Rajput	Natural Drug Research	India	ANTIOXIDANT ANALYSIS OF DIFFERENT PARTS OF RAW CARICA PAPAYA
12023	20181050	Mr. Virendra Nath	Pharmaceutical/Medicinal Chemistry	India	RECOGNITION OF DPP-IV INHIBITORS USING INSILICO APPROACH FOR TREATMENT OF TYPE2 DIABETES MELLITUS
12024	20181114	Mrs. Smita Shelke	Pharmaceutical/Medicinal Chemistry	India	DEVELOPMENT OF RP-HPLC METHOD FOR STANDARDIZATION OF AEGLE MARMELOS (L.)

12025	20181126	Mrs. Dhanashri Mali	Pharmaceutical/Medicinal Chemistry	India	TARGETED DRUG DELIVERY SYSTEM FOR CANCER- CARBON NANOTUBE
12026	20181170	Mrs. Judy Jays	Pharmaceutical/Medicinal Chemistry	India	MOLECULAR DOCKING STUDIES OF SOME NOVEL FURAN DERIVATIVES AS POTENT INHIBITORS OF ESCHERICHIA COLI
12027	20181174	Dr. Majid Khan	Pharmaceutical/Medicinal Chemistry	India	DEVELOPMENT OF 2D AND 3D QSAR MODELS OF ARYL THIAZOLE DERIVATIVES FOR ANTIBACTERIAL ACTIVITY
12028	20181190	Mrs. Vijay Bhanu Perumalsamy	Pharmaceutical/Medicinal Chemistry	India	MOLECULAR DOCKING STUDIES OF NOVEL COUMARINO PYRAZOLINONE DERIVATIVES AS ANTIFUNGAL AGENTS
12029	20181197	Miss Knolin Thachil	Pharmaceutical/Medicinal Chemistry	India	DESIGN AND MOLECULAR DOCKING STUDIES OF NOVEL HYBRID MOLECULES OF BENZOXAZINYL PYRAZOLE ARYLIDENES AS POTENT ANTIFUNGAL AGENTS
12030	20181402	Mrs. Nutan Naik	Pharmaceutical/Medicinal Chemistry	India	STUDY OF POLYMORPHISM ON SELECTED DRUGS: PARGEVERINE HYDROCHLORIDE AND PYRIMETHAMINE
12031	20181019	Mr. Tanmoy Ghosh	Pharmaceutics	India	FORMULATION AND EVALUATION OF KETOCONAZOLE BUOYANT TABLETS
12032	20181089	Miss Gautami Gaude	Pharmaceutics	India	FORMULATION DEVELOPMENT OF LOW SOLUBILITY DRUG SUBSTANCE BY SOLID DISPERSION TECHNIQUE
12033	20181106	Dr. Pallavi Chaudhari	Pharmaceutics	India	FORMULATION AND OPTIMIZATION OF FAST DISINTEGRATING TABLETS USING READY-TO-USE EXCIPIENTS
12034	20181124	Dr. Laxmikant Barde	Pharmaceutics	India	DEVELOPMENT AND EVALUATION OF MOLECULARLY IMPRINTED POLYMER FOR THE ENTRAPMENT OF ACEPHATE
12035	20181140	Dr. Meenakshi Bharkatiya	Pharmaceutics	India	DESIGNING AND OPTIMIZATION OF CONTROLLED POROSITY OSMOTIC PUMP OF GLICLAZIDE
12036	20181159	Mrs. Shweta Borkar	Pharmaceutics	India	FORMULATION DEVELOPMENT AND EVALUATION OF FAST DISSOLVING FILMS OF EBASTINE
12037	20181183	Mr. Sahebrao Boraste	Pharmaceutics	India	TO STUDY THE EFFECT OF COMPRESSION AND COMPACTION PROPERTIES ON DISINTEGRATION OF TABLETS CONTAINING LOW ACYL GELLAN GUM AS DISINTEGRANT USING DRUGS WITH DIFFERENT SOLUBILITIES.
12038	20181188	Miss Dolly Jain	Pharmaceutics	India	POLYMERIC NANOPARTICLES FOR SIRNA DELIVERY FOR CANCER THERAPY
12039	20181203	Miss Mini Agrawal	Pharmaceutics	India	FABRICATION AND EVALUATION OF SOLID LIPID NANOPARTICLES OF ANTIEPILEPTIC DRUG- PHENYTOIN
12040	20181214	Miss Anwesha Banerjee	Pharmaceutics	India	NANOSTRUCTURED LIPID CARRIERS FOR SUSTAINED DELIVERY OF ANTISEIZURES DRUG
12041	20181225	Miss Suthar Dipakkumar	Pharmaceutics	India	EMPIRICAL DEVELOPMENT OF ORALLY DISINTEGRATING TABLETS OF MICROSPHERES OF HIGHLY VARIABLE WATER SOLUBLE DRUG BASED ON QUALITY BY DESIGN
12042	20181234	Mr. Ravikant Gupta	Pharmaceutics	India	DESIGN AND DEVELOPMENT OF ANTIRETROVIRAL DRUG
12043	20181279	Miss Priyanka Surwase	Pharmaceutics	India	DESIGN AND DEVELOPMENT OF TOOTH PASTE CONTAINING ALCOHOLIC EXTRACT OF PSIDIUM GUAJAVA LEAF
12044	20181281	Miss Mahewash Pathan	Pharmaceutics	India	FORMULATION AND EVALUATION OF CHEWABLE TABLETS CONTAINING AQUEOUS EXTRACT OF ZINGIBER OFFICINALE
12045	20181284	Dr. Ananda Kumar Chettupalli	Pharmaceutics	India	DEVELOPMENT AND CHARACTERIZATION OF ANTIPSYCHOTIC ACTIVITY OF ARIPIPRAZOLE TABLETS FORMULATION
12046	20181298	Mr. Shubham Mukherjee	Pharmaceutics	India	PHYSICOCHEMICAL AND PHARMACEUTICAL CHARACTERISATION OF MUCILAGE FROM SWEET BASIL SEED
12047	20181314	Miss Dipanjana Ash	Pharmaceutics	India	HIBISCUS LEAF MUCILAGE AS STABILISER FOR PHARMACEUTICAL DISPERSE SYSTEMS
12048	20181319	Mr. Kiran H.C	Pharmaceutics	India	GRAPHENE NANORIBBONS LOADED WITH SELECTIVE ESTROGEN RECEPTORS MODULATORS FOR TARGETING HUMAN BREAST CANCER CELLS
12049	20181320	Mr. Shahid Wani	Pharmaceutics	India	PREPARATION, EVALUATION AND CHARECTERIZATION OF SILK FIBROIN NANOSPHERES LOADED WITH TELMISARTAN FOR DRUG DELIVERY SYSTEMS
12050	20181325	Miss Ramya A	Pharmaceutics	India	FORMULATION AND OPTIMISATION OF CIMETIDINE PRONIOSOMES: AN IN VITRO AND EX VIVO STUDY
12051	20181326	Mr. Aravind M	Pharmaceutics	India	DEVELOPMENT AND EVALUATION OF CELIPROLOL TRANSDERMAL PATCHES.

12052	20181327	Mr. Prince R	Pharmaceutics	India	DESIGN AND EVALUATION OF CEFUROXIME AXETIL FLOATING MICROBALLOONS
12053	20181329	Mrs. Seema Shet	Pharmaceutics	India	FORMULATION OF ORAL SUSTAINED RELEASE TABLETS OF ACECLOFENAC SOLID DISPERSIONS
12054	20181331	Mr. Sandeep Kanna	Pharmaceutics	India	FORMULATION AND EVALUATION OF GALLIC ACID AND XYLOGLUCAN BASED HYDROGEL FOR WOUND HEALING APPLICATION
12055	20181332	Mr. Tanmoy Das	Pharmaceutics	India	FORMULATION AND DEVELOPMENT OF DOXORUBICIN LOADED POLYMERIC NANOPARTICLE WAFERS FOR BRAIN TARGETING THERAPY OF GLIOMA
12056	20181333	Mr. Praveen Sivadasu	Pharmaceutics	India	DEVELOPMENT AND EVALUATION OF NASAL DRUG DELIVERY SYSTEMS FOR EFFECTIVE TREATMENT OF BRAIN DISORDERS
12057	20181345	Dr. Parthasarathi Subramanian	Pharmaceutics	India	3D PRINTING TECHNOLOGY IN PHARMACEUTICAL DRUG DELIVERY: PROSPECTS AND CHALLENGES
12058	20181348	Mr. Sandeep D S	Pharmaceutics	India	TEMPERATURE TRIGGERED OPHTHALMIC IN SITU GELS OF DORZOLAMIDE HYDROCHLORIDE FOR GLAUCOMA
12059	20181349	Mr. Sunil Kumar Aute	Pharmaceutics	India	AEGLE MARMELOS AS A DISINTEGRANT IN DESIGN OF FAST DISSOLVING TABLETS
12060	20181397	Shreshth Poddar	Pharmaceutics	India	PREPARATION AND CHARACTERIZATION OF PLGA LOADED NEEM NANOPARTICLE AND DRUG LOADED WAFERS
12061	20181029	Miss Andugula Kavitha	Pharmacology	India	EVALUATION OF EFFECTS OF COMMIPHORA WIGHTII IN DEHYDROEPIANDROSTERONE (DHEA) INDUCED POLYSTIC OVARY SYNDROME (PCOS) IN RODENTS
12062	20181070	Mrs. Bhavana Bhat	Pharmacology	India	INFLUENCE OF ADR ON HEALTH ECONOMICS: A REVIEW
12063	20181072	Dr. Mohith N	Pharmacology	India	DOCTOR'S PERCEPTION ON INTEGRATED MEDICINE
12064	20181073	Dr. Rakshitha B V	Pharmacology	India	COMPARISON OF SAFETY AND TOXICITY OF LIPOSOMAL DOXORUBICIN VS. CONVENTIONAL ANTHRACYCLINES: A SYSTEMATIC REVIEW AND META-ANALYSIS
12065	20181076	Mr. Subeesh Viswam	Pharmacology	India	A COMPARATIVE STUDY OF DATA MINING ALGORITHMS USED FOR SIGNAL DETECTION IN FDA AERS DATABASE
12066	20181076	Mr. Subeesh Viswam	Pharmacology	India	LEVONORGESTREL AND NOVEL ADVERSE EVENTS: A DISPROPORTIONALITY ANALYSIS OF FOOD AND DRUG ADMINISTRATION ADVERSE EVENT REPORTING SYSTEM (FAERS) DATABASE
12067	20181082	Dr. Minnikanti Satya Sai	Pharmacology	India	KNOWLEDGE AND PERCEPTION OF FARMERS REGARDING PESTICIDE USAGE IN A RURAL FARMING VILLAGE, SOUTHERN INDIA
12068	20181093	Miss Simhadri Kalpana	Pharmacology	India	PREVALENCE OF ADVERSE DRUG REACTIONS AMONG HOSPITALIZED GERIATRIC PATIENTS IN THE DEPARTMENT OF MEDICAL ONCOLOGY: A PROSPECTIVE OBSERVATIONAL STUDY
12069	20181102	Mrs. Nair Gouri	Pharmacology	India	PROTECTIVE EFFECT OF BAMBUSA ARUNDINACEAE AGAINST ACETAMINOPHEN-INDUCED HEPATOTOXICITY IN RATS
12070	20181115	Mr. Kranthi Swaroop Koonisetty	Pharmacology	India	ASSESSMENT OF KNOWLEDGE REGARDING THE USE OF ANTIMICROBIALS AND ANTIMICROBIAL RESISTANCE AMONGST PHARMACY STUDENTS IN ANDHRA PRADESH AND KARNATAKA
12071	20181116	Miss Jisna Jacob	Pharmacology	India	EVALUATION OF MEDICATION ADHERENCE AND TREATMENT SATISFACTION AMONG PATIENTS IN THE PSYCHIATRY OUTPATIENT DEPARTMENT
12072	20181117	Miss Sharon Jose	Pharmacology	India	QUALITY OF LIFE IN WOMEN WITH POLYCYSTIC OVARIAN SYNDROME: REQUISITE OF CLINICAL PHARMACIST INTERVENTION
12073	20181119	Dr. Pudi Chiranjeevi	Pharmacology	India	STEVENS JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS OVERLAP: A CASE REPORT
12074	20181123	Mrs. Amruta Yadav	Pharmacology	India	NEPHROPROTECTIVE ACTIVITY OF PLUMERIA RUBRA L.AGANIST CISPLATIN INDUCED NEPHROTOXICITY AND RENAL DYSFUNCTION
12075	20181143	Dr. Mohammad Azamthulla	Pharmacology	India	ANTI-HYPERLIPEDIMIC ACTIVITY OF CARDIOSPERMUM HALICACABUM LEAF EXTRACT IN HIGH FAT DIET INDUCED HYPERLIPIDEMIA RAT
12076	20181144	Miss Sneha Dutta	Pharmacology	India	INSIGHT INTO SELF-MEDICATION DEMEANOR AMONG PEOPLE WORKING IN PRIVATE SECTOR IN AN URBAN POPULATION
12077	20181152	Dr. V. Lakshmi Marise	Pharmacology	India	EFFECTIVENESS OF EDUCATIONAL INTERVENTION IN IMPROVING PERSONAL HYGIENE AMONG URBAN PRIMARY SCHOOL CHILDREN Ã¢Â‚¬Â€Œ A KAP STUDY
12078	20181153	Miss Sneha Koshy	Pharmacology	India	A SYSTEMATIC REVIEW ON DETERMINANTS AND RISK FACTORS OF ADVERSE DRUG REACTIONS IN ACUTE

					CARE SETTINGS
12079	20181153	Miss Sneha Koshy	Pharmacology	India	PATTERN OF ANTIMICROBIALS USAGE IN OPEN ABDOMINAL SURGERIES
12080	20181171	Miss Supritha D	Pharmacology	India	IN VITRO AND IN VIVO STUDIES ON CARDIOPROTECTIVE ACTION OF TAMARINDUS INDICA. L LEAF EXTRACT
12081	20181194	Miss Sneha Reji	Pharmacology	India	ASSESSMENT OF ATTITUDE TOWARDS SELF-MEDICATION AMONG PREGNANT WOMEN
12082	20181195	Miss Anupama Murthy	Pharmacology	India	KNOWLEDGE OF SELF-MEDICATION PRACTICES AMONG PREGNANT WOMEN: A CROSS-SECTIONAL STUDY
12083	20181206	Miss Apoorva Kulkarni	Pharmacology	India	PANTOPRAZOLE AND NOVEL ADVERSE EVENTS: A DISPROPORTIONALITY ANALYSIS OF FOOD AND DRUG ADMINISTRATION ADVERSE EVENT REPORTING SYSTEM (FAERS) DATABASE
12084	20181207	Miss Harsha Nair	Pharmacology	India	INCIDENCE OF ADVERSE DRUG REACTIONS DUE TO INAPPROPRIATE PROTON PUMP INHIBITORS USE: A PROSPECTIVE STUDY
12085	20181208	Miss Gayatri Sujive	Pharmacology	India	PREDICTORS ASSOCIATED WITH ADVERSE DRUG REACTIONS AMONGST GERIATRIC PATIENTS IN AN OUTPATIENT CLINIC
12086	20181233	Mr. Ashutosh Jain	Pharmacology	India	ISOLATION AND CHARACTERIZATION OF COGNITIVE ENHANCING BIOACTIVE MOLECULE FROM INDIAN MEDICINAL PLANT
12087	20181254	Miss Sangana Reddy	Pharmacology	India	DRUG UTILISATION EVALUATION OF CHEMOTHERAPEUTIC AGENTS IN CANCER PATIENTS
12088	20181269	Miss Georgina James	Pharmacology	India	PHARMACOVIGILANCE OF ANESTHETICS IN THE DEPARTMENT OF GENERAL SURGERY:A PROSPECTIVE OBSERVATIONAL STUDY
12089	20181270	Mr. Naveen Kumar	Pharmacology	India	INCIDENCE OF ADVERSE DRUG REACTIONS AMONG PATIENTS USING BENZODIAZEPINES IN THE DEPARTMENT OF PSYCHIATRY IN A TERTIARY CARE HOSPITAL, BANGALORE, KARNATAKA
12090	20181299	Mr. Bharath Raj K C	Pharmacology	India	A STUDY ON TREATMENT DEFAULTERS IN TUBERCULOSIS PATIENTS ON DOTS THERAPY
12091	20181300	Dr. Rajesh Ks	Pharmacology	India	UTILISATION EVALUATION OF CEPHALOSPORINS
12092	20181306	Mr. Rajat Rathore	Pharmacology	India	LITERARY INVESTIGATIONS ON MYCOPLASMA GENITALIUM: NEXT SUPERBUG
12093	20181264	Miss Aabha Bhave	Natural Drug Research	India	EVALUATION OF NUTRITIONAL, PHYTOCHEMICAL AND ANTIOXIDANT POTENTIAL OF DIFFERENT EXTRACTS OF HYPTIS SUAVEOLENS
12094	20181413	Mr. Vasudev Pai	Natural Drug Research	India	IN-SILICO AND IN-VITRO-SECRETASE INHIBITORY ACTIVITY OF SOME NATURAL COMPOUNDS
12095	20181505	Miss Kitty Rodrigues	Natural Drug Research	India	DEVELOPMENT AND EVALUATION OF BIODEGRADABLE, ECO-FRIENDLY NATURAL MOSQUITO REPELLENT
12096	20181176	Dr. Jitendra Vaghela	Pharmacology	India	ISONIAZID INDUCED SYSTEMIC LUPUS ERYTHEMATOUS: A CASE REPORT.
12097	20181381	Miss Anushruti Anushrutj	Pharmacology	India	IMPACT OF CLINICAL PHARMACIST IN MODULATION OF HEALTHCARE SYSTEM
12098	20181434	Dr. Bhargav Nagalla	Pharmacology	India	PREVALENCE OF ANEMIA AMONG PREGNANT WOMEN IN GUNTUR, ANDHRA PRADESH
12099	20181341	Mr. Imran Khan	Pharmacology	India	AN OVERVIEW ON DIABETIC NEPHROPATHY
12100	20181354	Dr. Divya Jyothi	Pharmaceutics	India	ANTIMICROBIAL POTENTIAL OF HYDROGEL INCORPORATED WITH PLGA NANOPARTICLES OF CROSSANDRA INFUNDIBULIFORMIS
12101	20181035	Mrs. Anubha Jain	Pharmaceutics	India	CONJUGATED DENDRIMERS: A NEW ERA FOR CANCER TARGETED DRUG DELIVERY
12102	Offline	Sayyam Shah		India	POTENTIAL OF VOICE AS BIOMARKER FOR EARLY DETECTION OF DISEASES
12103	Offline	Shailja Sharma		India	ALTERNATIVE TO ANIMAL STUDY: CURRENT STATUS AND FUTURE PERSPECTIVE
12104	Offline	Priti Tagde		India	ELOQUENT WOUND HEALING ACTIVITY BY GALINSOGA PARVIFLORA LEAVES EXTRACT
12105	Offline	Ekta Rai		India	RECENT TENOR OF DRUG DELIVERYAND DISEASE MANAGEMENT IN THE CURRENT PERSPECTIVE
12106	Offline	Yashita Singh		India	PREDICTIVE ANALYSIS IN ELECTRONIC HEALTH RECORD (EHR)
12107	Offline	Neetu Lodhi		India	HERBS FOR THE MANAGEMENT OF OBESITY
12108	Offline	Dr. Namrata Singh		India	EVALUATION OF IMMUNOMODULATORY ACTIVITY ON DICHCLOROMETHANE LEAVES EXTRACT OF SPINACIA OLERACIA
12109	Offline	Parivesh Kumar Jain		India	INSULIN PULMONARY DELIVERY

12110	Offline	Rahul Sharma		India	DENDRITIC CELL BASED DRUG DELIVERY IN CANCER THERAPY
12111	Offline	Saurabh Shete		India	LUNAR PLANTING: THE BEST LUNAR PHASE AND SIGN FOR INCREASED VIGOR
12112	Offline	Reenu Yadav		India	FORMULATION AND CHARACTERIZATION OF ANTIMICROBIAL CHEWING GUM DELIVERY OF SOME HERBAL EXTRACTS FOR TREATMENT OF PERIODONTAL DISEASES
12113	Offline	Abhijit Mote		India	ECOFRIENDLY VALIDATED SPECTROPHOTOMETRIC METHOD FOR THE ESTIMATION OF AMLODIPINE BESYLATE BY USING HYDROTROPIC SOLUBILIZATION METHOD
12114	Offline	Dr. Anita Shinde		India	“LAZY EYE” AMBLYOPIA
12115	Offline	Amit Alexander		India	THERAPEUTIC POTENTIAL OF AN OLIGO ELEMENT
12116	Offline	Vikas Wamane		India	FORMULATION OF AN INTRATUMORAL INJECTION BY UTILIZING THE POLOXAMER BASED IN SITU INJECTABLE HYDROGEL
12117	Offline	Manoj Kamble		India	TEXT NECK SYNDROME
12118	Offline	Akshay Waghmare		India	A REVIEW ON NEEDLE–FREE INJECTION TECHNOLOGY
12119	Offline	Rushikesh Naikwade		India	RECENT ADVANCES IN BRAIN TARGETED DRUG DELIVERY SYSTEM: A REVIEW
12120	Offline	Juned Shaikh		India	MOUTH DISSOLVING STRIPS: AN APROCH TO NOVEL DRUG DELIVERY SYSTEM
12121	Offline	Rohan Malhare		India	LIFESTYLE DISORDER AND ITS MANAGEMENT IN AYURVEDA
12122	Offline	Ganesh Pore		India	VITAMIN-D DEFICIENCY AND CANCER: A GROWING RISK OF CANCER
12123	Offline	Sandip Lahane		India	ROLE OF CHEMISTRY IN AGRICULTURE
12124	Offline	Rama Shukla		India	NATURAL REMEDIES IN TREATMENT OF PATIENTS WITH BIPOLAR DISORDER: A REVIEW
12125	Offline	Disha Arora		India	CURRENT INSIGHTS OF DRUG ABUSE AND RESEARCH IN NARCOTIC DRUGS AND PSYCHOTROPICS SUBSTANCES
12126	20181513	Ms. Sunanda Parab	Natural Drug Research	India	TRITEPENOIDS FROM DESMODIUM OOJEINENSIS AND IN VITRO CYTOTOXIC ACTIVITY
12127	20181521	Ms. Zeeshan Kalloli	Natural Drug Research	India	EVALUATION OF FREE RADICALS SCAVENGING POTENTIALS OF ETHNOMEDICINAL PLANTS OF PERNEM (GOA) AND THEIR INCORPORATION IN TO ALGINATE-COATED GAUZE
12128	20181522	Ms. Sandhya Dabholkar	Natural Drug Research	India	ISOLATION AND PRELIMINARY LARVICIDAL ACTIVITY FROM IONIDIUM SUFFRITICOSUM
12129	20181340	Mr. Vijay Ikale	Natural Drug Research	India	ANTIOXIDANT AND ANTIDIABETIC ACTIVITY OF EMBLICA OFFICINALIS AND AEGLE MARMELOS EXTRACTS IN STREPTOZOTOCIN-INDUCED DIABETIC RATS
12130	20181172	Kavitha Nishad / Mrs. Sathiya R		India	IMPACT OF ALUMINIUM CHLORIDE ON LIPID PROFILE IN WISTAR ALBINO RATS
12131		Bidye Durgesh Paresh			
12132	Offline	Arvind Sharma		Shiva Institute	DRUG NANOCRYSTALS –FROM PRE-FORMULATION CONSIDERATIONS TO THE FINAL FORMULATED ORAL DOSAGE FORM:- RECENT RESEARCHES, ADVANCES AND PATENTS
12133	Offline	Akshay Sharma		Shiva Institute	FORMULATION AND EVALUATION OF GINGER OLEORESIN IN CARBON TETRACHLORIDE INDUCED HEPATOTOXICITY IN RATS
12134	Offline	Rohit Thakur		Shiva Institute	NANOCRSYTAL BASED FORMULATION FOR OCULAR DRUG DELIVERY
12135		Himani		Shiva Institute	PREPARATION, CHARACTERIZATION AND PHARMACOKINETICS OF NANOCRYSTAL FORMULATION FOR POORLY SOLUBLE DRUG
12136	Offline	Nisha		Shiva Institute	STRUCTURE BASED DESIGNING AND ADME-T STUDIES OF BUTENOLIDE DERIVATIVES AS POTENTIAL AGENTS AGAINST RECEPTOR ICAM-1: A DRUG TARGET FOR CEREBRAL MALARIA

12137	Offline	Prashant Y. Mali		Oriental College	IMPACT OF PHARMACOVIGILANCE ON ANALYSIS OF ADVERSE DRUG REACTIONS IN INDIA
12138	Offline	Santosh Singh Bhadoriya		Bhagwant University	A REVIEW ON ROLE OF SOME HERBAL CONSTITUENTS IN PESTICIDES INDUCED REPRODUCTIVE TOXICITY IN EXPERIMENTAL ANIMALS
12139	Offline	Shikha Jain		Ravishankar College	FORMULATION AND EVALUATION OF SURFACE ENGINEERED DOXORUBICIN LOADED SOLID LIPID NANOPARTICLES FOR TARGETED DELIVERY TO OVARIAN CANCER
12140	Offline	Roshni Shivvedi		Ravishankar College	NOVEL THERAPEUTIC TREATMENT STRATEGIES FOR TRIPLE-NEGATIVE BREAST CANCER (TNBC)
12141	Offline	Anaytullah MD		Truba Institute	LIPOSOMAL DRUG DELIVERY OF PLACENTA EXTRACT AN NOVEL APPROACH

Innopharm 3 Poster Presentation Schedule for Day 2 (23rd October 2018)

Day 2	Date: 23-Oct-18 Time: 03:00 PM to 04:00 PM				
Poster No.	**Reg. No.**	**Name**	**Section**	**Affiliation**	**Abstract Title**
22001	20181422	Mr. Chandra Guduru	Clinical Research	India	EVALUATION OF ANTI-CATATONIC EFFECT OF STEM EXTRACTS OF SECURINEGA LEUCOPYRUS ON HALOPERIDOL INDUCED CATATONIA IN RATS
22002	20181423	Mr. Gopichand Janjanam	Clinical Research	India	SECURINEGA LEUCOPYRUS IMPROVES MEMORY AND LEARNING IN ALZHEIMER'S MODEL: AN EXPERIMENTAL STUDY IN RAT
22003	20181425	Miss Amreensultana Shaik	Clinical Research	India	NEUROPROTECTIVE ACTIVITY OF SECURINEGA LEUCOPYRUS AGAINST ETHANOL INDUCED COGNITIVE IMPAIRMENT
22004	20181419	Mrs. Saptami Kanekar	Miscellaneous	India	SYNERGISTIC ACTIVITY OF CARUM COPTICUM ESSENTIAL OIL AND ANTIBIOTICS AGAINST MULTI-DRUG RESISTANT PSEUDOMONAS AERUGINOSA
22005	20181617	Mr. Adarsh V. K.	Miscellaneous	India	COMPUTATIONAL SUBTRACTIVE GENOMICS AND GENE EXPRESSION STUDIES APPROACH FOR THE IDENTIFICATION OF NOVEL DRUG TARGETS IN MYCOBACTERIUM TUBERCULOSIS
22006	20181303	Dr. Ram Mohan	Natural Drug Research	India	EVALUATION OF OCIUM TENUIFLORUM AND SYZYGIUM AROMATICUM PHENOLIC ETHEREAL OILS IN-VITRO ANTI-INFLAMMATORY AND ANTI-BACTERIAL ACTIVITIES
22007	20181317	Dr. Baba Garige	Natural Drug Research	India	EVALUATION OF GALPHIMIA GLAUCA STEM METHANOL EXTRACT FRACTIONS FOR ANALGESIC, AND ANTI-INFLAMMATORY ACTIVITIES
22008	20181323	Mr. Nandadeep Jadhav	Natural Drug Research	India	ANTI-CANCER AND ANTI-ANGIOGENESIS ACTIVITY OF LACHESIS-200
22009	20181334	Miss Poonam Kumari	Natural Drug Research	India	MURRAYA KOENIGII: INVESTIGATIONS ON RELATIONSHIP BETWEEN SAR & BIOLOGICAL ACTIVITY OF PLANT BIOACTIVE
22010	20181379	Miss Renu Nimoriya	Natural Drug Research	India	BIOSYNTHESIS OF CARDIAC GLYCOSIDES IN PLANTLETS DEVELOPED THROUGH ZYGOTIC EMBRYO CULTURE OF NERIUM OLEANDER L.
22011	20181440	Mr. Ripan Mondal	Natural Drug Research	India	A STUDY ON MOMORDICA CHARANTIA:STRUCTUIRE ACTIVITY RELATIONSHIP & PHYTOCONSTITUENTS
22012	20181483	Mr. Pradeep Pal	Natural Drug Research	India	STUDY ON ETHANOLIC EXTRACT OF ARTEMISIA NILAGIRICA ON NEURODEGENERATIVE DISEASES
22013	20181493	Miss Heera Gaonkar	Natural Drug Research	India	BIOMIMETIC SYNTHESIS OF SILVER NANOPARTICLES USING GLYCYRRHIZA GLABRA EXTRACT: EVALUATION OF PROCESS VARIABLES AND THEIR CHARACTERIZATION
22014	20181494	Mr. Dhiraj Naik	Natural Drug Research	India	DEVELOPMENT AND EVALUATION : TRANSDERMAL DRUG DELIVERY OF GLYCYRRHIZA GLABRA
22015	20181497	Miss Aditi Kamat	Natural Drug Research	India	PHOSPHOLIPID BASED NANOCARRIERS OF GLYCYRRHIZA GLABRA FOR THE ENHANCED DELIVERY OF PHYTOCONSTITUENTS
22016	20181504	Miss Sunita Pradhan	Natural Drug Research	India	ISOLATION, CHARACTERIZATION AND IDENTIFICATION OF COUMESTAN AND ECLIPTASAPONINS FROM THE WHOLE PLANT OF ECLIPTA ALBA
22017	20181508	Miss Poonam Usapkar	Natural Drug Research	India	GREEN SYNTHESIS, CHARACTERIZATION BIOLOGICAL EVALUATION AND EFFECT OF PROCESS VARIABLES ON SILVER NANOPARTICLES PREPARED USING AQUEOUS EXTRACT OF MUCUNA PRUREINS LINN.
22018	20181511	Dr. Nagja Tripathi	Natural Drug Research	India	ANTI-OXIDANT AND ANTI-DIABETIC ACTIVITY OF A POLYHERBAL FORMULATION
22019	20181592	Dr. Shanaz Banu	Natural Drug Research	India	PHARMACOGNOSTICAL STUDIES AND ISOLATION OF AN ALKALOID FROM BARLERIA CRISTATA LINN. ROOTS
22020	20181408	Mr. Mayank Mayank	Pharmaceutical/Medicinal	India	EFFECTIVENESS OF PRP IN ANDROGENIC ALOPECIA

			Chemistry		
22021	20181414	Dr. Richard Lobo	Pharmaceutical/Medicinal Chemistry	India	GENERATION OF PHARMACOPHORE AND ATOM BASED 3D-QSAR MODEL OF NOVEL 5-ALPHA-REDUCTASE INHIBITORS
22022	20181416	Mr. Aravinda Pai	Pharmaceutical/Medicinal Chemistry	India	A STUDY BASED ON BINARY FINGERPRINTS FOR FLAVONE ANALOGUES AS CDK2/CYCLIN A INHIBITORS - A TWO DIMENSIONAL QSAR STUDIES
22023	20181430	Mr. Bhargav Chikkirala	Pharmaceutical/Medicinal Chemistry	India	SYNTHESIS AND BIOLOGICAL EVALUATION OF SOME NOVEL DERIVATIVES OF BENZYLIDENE
22024	20181431	Mrs. Kavitha Kumpati	Pharmaceutical/Medicinal Chemistry	India	SIMULTANEOUS ESTIMATION OF METFORMIN AND GLIMIPRIDE IN BULK AND PHARMACEUTICALS BY RP-HPLC METHOD
22025	20181432	Miss Raga Amrutha Pogadapula	Pharmaceutical/Medicinal Chemistry	India	GREEN CHEMISTRY APPROACH FOR SYNTHESIS OF BENZIMIDAZOLE DERIVATIVES
22026	20181476	Miss Neelima Shrivastava	Pharmaceutical/Medicinal Chemistry	India	SYNTHESIS OF 1-(1H-BENZO[D]IMIDAZOL-2-YL)ETHANONES AS POTENTIAL ANTICANCER AGENTS
22027	20181477	Miss Ankita Pathak	Pharmaceutical/Medicinal Chemistry	India	PHARMACOPHORE BASED DRUG DESIGN AND SYNTHESIS OF ONCOLOGICAL HYBRID INHIBITORS
22028	20181531	Dr. Pawan Raghav	Pharmaceutical/Medicinal Chemistry	India	IDENTIFICATION OF ANTI-CANCER STEM CELL MOLECULES BASED ON MACHINE LEARNING ANALYSIS OF CANCER HOTSPOTS
22029	20181572	Miss Deepika Bairagee	Pharmaceutical/Medicinal Chemistry	India	VALIDATION OF DEVELOPED ANALYTICAL METHOD FOR ESTIMATION OF HALCINONIDE IN BULK AND CREAM DOSAGE FORM
22030	20181353	Dr. Narayana R	Pharmaceutics	India	MICROEMULSION BASED GEL OF SULCONAZOLE NITRATE FOR TOPICAL APPLICATION
22031	20181452	Dr. Archana Kujur	Pharmacology	India	REVIEW OF CURRENT TRENDS AND RECENT ADVANCES IN THERAPEUTIC DRUG MONITORING (TDM)
22032	20181396	Mr. Shubham Singh	Pharmaceutics	India	PREPARATION, CHARACTERIZATION AND EVALUATION OF HERBAL DRUG LOADED WAFERS FOR DIABETIC WOUND HEALING
22033	20181421	Mr. Deekshitha Ranga	Pharmaceutics	India	DESIGN & EVALUATION OF MOUTH DISSOLVING TABLETS OF LAMOTRIGINESOLID DISPERSIONS
22034	20181438	Mr. Vishal Amrode	Pharmaceutics	India	A FOCUS ON FLOATING DRUG DELIVERY SYSTEM
22035	20181468	Mr. Raj Khatri	Pharmaceutics	India	NOVEL FORMULATION APPROACH FOR EFFECTIVE WOUND HEALING
22036	20181472	Miss Gargi Athavale	Pharmaceutics	India	NOVEL BILAYERED TABLET OF ROSUVASTATIN CALCIUM AND ASPIRIN IN THE TREATMENT OF HYPERLIPIDAEMIA
22037	20181473	Miss Divya Talasila	Pharmaceutics	India	EFFECT OF NOVEL PROCESSED SUPERDISINTEGRANTS ON ORAL
22038	20181474	Miss Pratiksha Prabhu	Pharmaceutics	India	DESIGN AND DEVELOPMENT OF NOVEL DOSAGE FORM FOR MALNUTRITION MANAGEMENT
22039	20181481	Miss Jigna Jain	Pharmaceutics	India	SOLUBILITY ENHANCEMENT STUDIES OF POORLY SOLUBLE DRUG
22040	20181484	Miss Krishna Baxi	Pharmaceutics	India	FORMULATION AND EVALUATION OF MODIFIED RELEASE TABLET: A TRIPLE LAYER TABLET FOR TREATMENT OF HELICOBACTER PYLORI INDUCED PEPTIC ULCER
22041	20181491	Mr. Melroy Dsa	Pharmaceutics	India	FORMULATION AND DEVELOPMENT OF COMBINATIONAL NOVEL TOPICAL DRUG DELIVERY SYSTEM FOR THE MANAGEMENT OF RHEUMATOID ARTHRITIS
22042	20181501	Miss Tejasri Maddirala	Pharmaceutics	India	AMYOTROPHIC LATERAL SCLEROSIS (ALS)
22043	20181517	Mr. Pushkar Sathe	Pharmaceutics	India	DEVELOPMENT AND CHARACTERIZATION OF NOVEL FORMULATION FOR SCALP CARE
22044	20181518	Miss Steffi Patrick	Pharmaceutics	India	DESIGN AND DEVELOPMENT OF NOVEL ORAL FORMULATION FOR TREATMENT OF MOUTH ULCERS.
22045	20181547	Dr. Dmytro Leontiev	Pharmaceutics	India	VALIDATION OF THE PROCEDURE FOR SPECTROPHOTOMETRIC DETERMINATION OF DESLORATADINE IN TABLETS IN ACCORDANCE WITH THE UNCERTAINTY CONCEPT

22046	20181548	Mr. Denis Leontiev	Pharmaceutics	India	IDENTIFICATION OF THE FOOD COLORING SUNSET YELLOW FCF IN TABLETS
22047	20181564	Mr. Ajit Varma	Pharmaceutics	India	FORMULATION AND EVALUATION OF MUCOADHESIVE MICROSPHERES IN GASTRORETENTIVE DELIVERY OF VENLAFAXINE HCL
22048	20181565	Mr. Satyajeet Harugale	Pharmaceutics	India	DEVELOPMENT, CHARACTERIZATION AND EVALUATION OF LIGAND CONJUGATED MAGNETIC SOLID LIPID NANOPARTICLES FOR THERANOSTIC APPLICATION IN COLORECTAL CANCER
22049	20181574	Miss Nandita H	Pharmaceutics	India	DEVELOPMENT AND EVALUATION OF ÃŽÂ²-TRICALCIUM PHOSPHATE MICROSPHERES TO IMPROVE BONE REGENERATION IN VITRO
22050	20181583	Miss Sandhyakumari Jain	Pharmaceutics	India	NANOTECHNOLOGY IS BASIC TECHNIQUES FOR DEVELOPMENT OF NOVEL DRUG DELIVERY SYSTEM.
22051	20181587	Miss Divyashree Prabhu	Pharmaceutics	India	NOVEL ANTI-INFLAMMATORY TOPICAL NANOSPHERES GEL.
22052	20181589	Miss Saishraddha Shirodker	Pharmaceutics	India	SUITABILITY OF SODIUM POLYACRYLATE FOR TOPICAL WOUNDS : FORMULATION,MICROBIOLOGICAL AND PHARMACOLOGICAL STUDY
22053	20181591	Miss Anushka Prabhu Parrikar	Pharmaceutics	India	LEPIDIUM SATIVUM: A NOVEL PHARMACEUTICAL EXCIPIENT
22054	20181599	Dr. J Josephine Jenita	Pharmaceutics	India	DEVELOPMENT, EVALUATION AND TARGETING OF STAVUDINE LOADED SERUM ALBUMIN POLYMER BASED NANOCARRIERS TO HIV RESERVOIRS
22055	20181604	Mr. Jaydeep Baghel	Pharmaceutics	India	SOLID AS SOLVENT: AN ORGANIC SOLVENT FREE, ECO-FRIENDLY, SPECTROPHOTOMETRIC ANALYSIS OF TABLETS OF INDOMETHACIN USING MELTED DIMETHYL UREA AS SOLVENT (MIXED SOLVENCY CONCEPT)
22056	20181606	Miss Indrani De	Pharmaceutics	India	FORMULATION AND EVALUATION OF OFLOXACIN FLOATING TABLET USING QUALITY BY DESIGN APPROACH
22057	20181609	Mr. Apurv Mishra	Pharmaceutics	India	DEVELOPMENT OF ACYCLOVIR LOADED MICROSPHERES FOR SUSTAINED RELEASE OPHTHALMIC DRUG DELIVERY
22058	20181611	Miss Megha Sharma	Pharmaceutics	India	DEVELOPMENT OF ESSENTIAL OILS BASED HERBAL DENTAL GEL FOR TREATMENT OF PERIODONTAL DISEASES
22059	20181309	Dr. Krishna Prasad Devarakonda	Pharmacology	India	SCREENING OF ALCOHOLIC AND AQUEOUS EXTRACTS OF MUSSAENDA ERYTHROPHYLLA (RUBIACEA) IN ALBINO RATS; FOR ITS DIURTIC ACTIVITY
22060	20181337	Miss Sahana Pai	Pharmacology	India	PHARMACOLOGICAL EVALUATION OF 'AMRUTHA KASHAYA' IN ACUTE HYPERLIPIDEMIC MODELS OF MICE
22061	20181358	Miss Rutuja Redkar	Pharmacology	India	ISOLATION AND CHARACTERIZATION OF CIRCULATING MICROPARTICLES BY FLOW CYTOMETRY
22062	20181361	Mrs. Flosy Menezes	Pharmacology	India	KNOWLEDGE OF ANTI-DIABETIC DRUGS AMONG THE NURSING STUDENTS OF INSTITUTE OF NURSING IN GOA
22063	20181366	Miss Datla Varsha	Pharmacology	India	AN INSIGHT INTO THE IMMUNOLOGICAL CHECKPOINT INHIBITORS IN CANCER
22064	20181369	Miss Gedda Keerthi	Pharmacology	India	DRUG UTILIZATION PATTERNS OF ANTIHYPERTENSIVES IN CARDIOLOGY WARDS IN A TERTIARY CARE HOSPITAL
22065	20181371	Miss Ayushi Chourasia	Pharmacology	India	EVALUATION OF ANTIARTHRITIC EFFECT OF OYSTER MUSHROOM PLEUROTUS OSTREATUS CV. FLORIDA ON COMPLETE FREUD ADJUVANT INDUCED ARTHRITIS IN RATS
22066	20181375	Miss B Manasa	Pharmacology	India	CANNABINOIDS AS AN ANTICANCER DRUG
22067	20181376	Miss Kirti Chauhan	Pharmacology	India	MEDICINAL PLANTS HOLD THE KEY FOR ALLEVIATION OF METABOLIC SYNDROME: A VIEWPOINT
22068	20181389	Miss Nemani Manaswini	Pharmacology	India	NOVEL ANTICANCER DRUGS FROM MARINE SOURCES :A REVIEW
22069	20181392	Miss Marshelin Das	Pharmacology	India	STEM CELL THERAPY IN CANCER TREATMENT
22070	20181400	Mr. Shreyash G.M.	Pharmacology	India	PRESCRIBING PATTERN OF MEDICATIONS USED FOR INSOMNIA AMONG PSYCHIATRIC PATIENTS

22071	20181426	Miss Seeta Pendyala	Pharmacology	India	ANTIMICROBIAL AND PHYTOCHEMICAL SCREENING OF PONGAMIA PINNATA BARK EXTRACT
22072	20181428	Miss Supriya Jillelamudi	Pharmacology	India	PHYTOCHEMICAL AND BIOLOGICAL EVALUATION OF CUCUMIS SATIVUS LEAF EXTRACT
22073	20181429	Mr. Anji Raya	Pharmacology	India	EVALUATION OF CARDIOPROTECTIVE EFFECT OF ETHANOLIC EXTRACT OF ABELMOSHCUS ESCULENTUS ON DOXORUBICIN INDUCED CARDIOTOXICITY IN RATS
22074	20181437	Miss Yamini Durga Guntupalli	Pharmacology	India	PHARMACOEPIDEMOLOGICAL STUDY ON HEMIPLEGIA IN TERTIARY CARE HOSPITAL
22075	20181441	Miss Anooja Joy	Pharmacology	India	A STUDY ON NON CATHETER RELATED PULMONARY INFECTIONS IN DIALYSIS PATIENTS
22076	20181445	Mr. Rahul Jain	Pharmacology	India	INHIBITORY ACTION OF CATECHIN AGAINST CARBOHYDRATE-DIGESTING ENZYMES: IN SIICO AND IN VITRO STUDIES
22077	20181448	Mr. Ashwin B	Pharmacology	India	ASSESSMENT OF MEDICINE PRESCRIBING TRENDS IN NEONATAL INTENSIVE CARE UNIT: A PROSPECTIVE OBSERVATIONAL STUDY
22078	20181469	Miss Sindhu R	Pharmacology	India	ANTI-PARKINSONÃ¢Â‚¬Â„¢S ACTIVITY ON NOVEL GLITAZONES
22079	20181503	Mr. Mrunal Patil	Pharmacology	India	PHARMACOLOGICAL SCREENING OF ANTI ULCER AGENTS - A REVIEW
22080	20181538	Mrs. Maya Nagvenkar	Pharmacology	India	SCREENING OF STEM BARK EXTRACT OF BAUHINIA VARIEGATA LINN. FOR PHYTOCHEMICAL CONSTITUENTS AND ANXIOLYTIC ACTIVITY
22081	20181539	Miss Aishwarya Palkar	Pharmacology	India	COMPARATIVE STUDY OF TWO MARKETED HERBAL FORMULATIONS FOR ANTI-ANXIETY EFFECT
22082	20181540	Miss Rutuja Sawant	Pharmacology	India	COMPARATIVE PHARMACOLOGICAL STUDY OF DRAKSHASAV AND HYDRO-ALCOHOLIC PREPARATIONS OF GRAPES AND RAISINS.
22083	20181541	Miss Tejaswi Nalkar	Pharmacology	India	PHARMACOLOGICAL SCREENING OF METHANOLIC EXTRACT OF THE STEM BARK OF PTEROCARPUS MARSUPIUM ROXB.
22084	20181542	Miss Dikshita Usapkar	Pharmacology	India	PHARMACOLOGICAL INVESTIGATION OF ETHANOLIC EXTRACT OF THESPESIA POPULNEA LEAVES
22085	20181543	Miss Sonal Naik	Pharmacology	India	ANTI-ANXIETY INVESTIGATION OF HYDROALCOHOLIC EXTRACT OF PHYLLANTHUS NIRURI LINN.
22086	20181544	Miss Rakshita Parab	Pharmacology	India	VIRGIN COCONUT OIL IMPROVES LEARNING AND MEMORY
22087	20181545	Mr. Omkar Gawde Surlakar	Pharmacology	India	EFFECT OF ETHANOLIC EXTRACT OF TEPHROSIA PURPUREA LINN. ON LEARNING AND MEMORY
22088	20181546	Mr. Pravindas Vaishnav	Pharmacology	India	PHARMACOLOGICAL INVESTIGATION OF MARKETED WEIGHT GAIN PRODUCTS AND FOOD SUPPLEMENT ON RATS
22089	20181552	Mrs. Asmita Arondekar	Pharmacology	India	COMPARATIVE EVALUATION OF BACOPA MONERI WITH ITS MARKETED PREPARATIONS SARASWATARISHTA AND BRAHMI GHRIT FOR CENTRAL NERVOUS SYSTEM ACTIVITY IN RATS
22090	20181099	Mr. Raju Thenge	Pharmaceutics	India	PREPARATION AND CHARACTERIZATION OF MICROCRYSTALS OF CARVEDILOL
22091	20181435	Dr. Shaila Lewis	Pharmaceutics	India	NANOEMULSION IMPREGNATED FILMS FOR THE TRANSDERMAL DELIVERY OF CYCLOBENZAPRINE
22092	20181486	Miss Pramita Waghambare	Pharmaceutics	India	DEVELOPMENT AND EVALUATION OF NOVEL ANTI-INFLAMMATORY FORMULATION FOR ARTHRITIS
22093	20181454	Dr. Manisha Varshney	Pharmacology	India	FIXED DOSE COMBINATION :AN OVERVIEW OF THE ISSUES FACED
22094	20181455	Dr. Megha Bansal	Pharmacology	India	AN ASSESSMENT TO EVALUATE THE AWARENESS OF KNOWLEDGE REGARDING FIXED DOSE COMBINATION(FDCS) AMONG RESIDENT DOCTORS IN A TERTIARY CARE HOSPITAL
22095	20181553	Mrs. Shailaja Mallya	Pharmacology	India	PHARMACOLOGICAL INVESTIGATIONS ASPARAGUS RACEMOSUS AND ITS MARKETED PREPARATIONS SARASWATARISHTA AND BRAHMI GHRIT
22096	20181593	Dr. P Prasanna	Pharmacology	India	EVALUATION OF ANXIOLYTIC EFFECT OF ALCOHOLIC EXTRACT OF CITRUS LIMON LEAVES ON OPEN FIELD TEST
22097	20181597	Dr. V Saikiran	Pharmacology	India	EVALUATION OF ANTIANXIETY EFFECT OF AQUEOUS EXTRACT OF MORINGA OLEIFERA LEAVES ON WISTAR RATS WITH ELEVATED PLUS MAZE & LIGHT DARK ARENA.

22098	20181245	Mr. Dattatray Patil	Pharmacology	India	PRELIMINARY PHYTOCHEMICAL SCREENING AND QUANTITATIVE ESTIMATION OF TOTAL FLAVONOIDS CONTENT OF CORCHORUS OLITORIUS
22099	20181246	Mr. Pravin Morankar	Pharmacology	India	STUDY OF ANTI DIABETIC POTENTIAL OF METHANOLIC EXTRACT OF SOLANUM VIRGINIUM
22100	20181286	Miss Monika Singh	Pharmacology	India	HYDROALCOHOLIC EXTRACT OF BIXA ORELLANA L. SHELLS EXERTED ANTIOXIDANT AND LIVER PROTECTIVE ACTIVITY IN RATS
22101	Offline	Rahul Trivedi		India	ANTI-ARTHRITIC ACTIVITY OF METHANOLIC EXTRACT AND VARIOUS FRACTIONS OF CENTELLA ASIATICA LEAVES: AN IN VITRO STUDY
22102	Offline	Swapnil Goyal		India	COMPARATIVE EVALUATION OF BUTEA MONOSPERMA (FLOWER) AND BOERHAAVIA DIFFUSA (ROOT) EXTRACTS IN FREUND'S COMPLETE ADJUVANT INDUCED ARTHRITIS IN RATS
22103	Offline	Priyanka Dubey		India	NANOTECHNOLOGY: AN INNOVATIVE APPROACH AS NANOGELS
22104	Offline	Amith K. R.		India	CLEANING VALIDATION FOR RESIDUAL AMOXICILLIN ON MANUFACTURING EQUIPMENT
22105	Offline	Avinasha S.		India	PROCESS VALIDATION AND CONTINUOUS IMPROVEMENT OF CO-AMOXICLAV POWDER FOR ORAL SUSPENSION
22106	Offline	Borra Vamsi		India	QUALITY RISK ASSESMENT AND MITIGATION PLAN TO THE CRITICAL MANUFACTURING PROCESS OF ANTI-DEPRESSANT TABLETS
22107	Offline	Damini V.		India	QUALIFICATION OF AUTOCLAVE CUM BUNG PROCESSOR
22108	Offline	Manjunath D. N.		India	QUALIFICATION OF ASEPTIC AREA FOR CLEAN ROOM
22109	Offline	Parameshwarappa Rajendra Patel		India	ANALYTICAL METHOD VALIDATION OF ANTI-RETRO VIRAL DRUG COMBINATION (300/300/50 MG)
22110	Offline	Raghuprakash P.		India	DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR THE ESTIMATION OF FLUOXETINE IN CAPSULE DOSAGE FORM
22111	Offline	Safvana Fava		India	PROCESS VALIDATION OF ACECLOFENAC GRANULES (100 MG)
22112	Offline	Sumukha Krishna P.		India	MODULATING DEFICIENCIES RELATED TO 'DRUG PRODUCT MANUFACTURING PROCESS AND CONTROLS" BY WAY OF BUILDING ANDA SUMMARY TEMPLATE AND CHECKPOINTS
22113	Offline	Syed Shakeeb Ahmed		India	FORMUALTION AND EVALUATION OF MUCOADHESIVE NANOPARTICLES OF REPAGLINIDE USING DESIGN OF EXPERIMENTATION
22114	Offline	Thomas George P.		India	DESIGN, FORMULATION AND EVALUATION OF POLY HERBAL GEL FOR TREATING MILD ACNE VULGARIS
22115	Offline	Chandan M. S.		India	DIGITAL HEALTH SOFTWARE PRECERTIFICATION PROGRAM
22116	Offline	Vinay Kumar K. M.		India	REGULATORY REQUIREMENTS FOR REGISTRATION AND APPROVAL OF GENERICS IN CHINA
22117	Offline	A. Akil		India	IMPACT OF ELECTRONIC CIGARETTES ON TEENS
22118	Offline	Kamireddy Karuna		India	REGULATORY CONSIDERATIONS FOR CONDUCTING CLINICAL TRIALS IN SPECIAL POPULATION
22119	Offline	Ms. Shikha Tambe		India	NAVIGATION PATHWAY FOR BIOSIMILARS IN JAPAN: A REGULATORY VIEW
22120	Offline	Nandhini B.		India	REGULATORY REQUIREMENTS FOR THE CONDUCT OF BIOEQUIVALENCE STUDIES IN US AND INDIA
22121	Offline	S. Arjun		India	REGULATORY CHALLENGES AND OPPORTUNITIES IN ANTIBIOTIC DRUG DEVELOPMENT
22122	Offline	Ms Kalpanakamnooore		India	USE OF MHEALTH SENSORS IN CLINICAL TRIALS
22123	Offline	Savitha S. Bhat		India	REGULATORY PATHWAY TO FILE THE NUTRACEUTICALS IN INDIA
22124	Offline	Ms G. Greeshma		India	DRUG DEVELOPMENT FOR PEDIATRIC POPULATION: A REGULATORY PERSPECTIVE
22125	Offline	Shashank N.		India	SIMILARITIES AND DIFFERENCES OF FILING DMF IN REGULATED MARKETS

22126	Offline	Mr Amar S.		India	REGULATORY CONSIDERATIONS IN THE DESIGN AND MANUFACTURING OF IMPLANTABLE 3D-PRINTED MEDICAL DEVICES
22127	Offline	G. Sai Bhavani		India	REGULATORY REQUIREMENTS ON BIOEQUIVALENCE GUIDANCE FOR REGISTRATION OF GENECRIC DRUG PRODUCT IN EUROPE AND BRAZIL
22128	Offline	Mr Venkateswara Reddy		India	STUDY ON THE EXTENT OF HARMONIZATION OF RE GULATORY REQUIREMENTS FOR REGISTRATION OF DRUG PRODUCTS IN BETWEEN ASEAN AND AFRICAN COUNTRIES
22129	Offline	Abhishek B. V.		India	NAVIGATION PATHWAY FOR APPROVAL OF DRUG PRODUCTS IN AUSTRALIA AND CANADA
22130	Offline	Amit Verma		India	SURFACE MODIFIED DOUBLE LIPOSOMESCONTAINING PREDNISOLONE AND METHOTREXATE FOR EFFECTIVE MANAGEMENT OF RHEUMATOID ARTHRITIS
22131	Offline	Nikhar Vishwakarma		India	DEVELOPMENT AND CHARACTERIZATION OF METFORMIN LOADED MICROSPHERES FOR EFFECTIVE MANAGEMENT OF DIABETIC HYPERGLYCAEMIA
22132	Offline	Rajeev Sharma		India	RELEASE PROMOTER-BASED NANOCOMPOSITE(S): FOR SITE SPECIFIC DELIVERY OF IMMUNOBIOACTIVE(S)
22133	Offline	Ravipati Eswar Sairam		Shirpur	LEAD (PB): TOXICITY AND REGULATORY PERSPECTIVES
22134	Offline	Rituparna Jana		LNCT Bhopal	PRIALT- A BLESSING OR VENIN – A REVIEW
22135	Offline	Sainath S Sindhikar		Shirpur	BLUE EYE TECHNOLOGY
22136	Offline	Siddharth Tholiya		Shirpur	NANOGEL- A TRANSCENDING CARRIER FOR EFFECTIVE DRUG DELIVERY
22137	Offline	Aman Tiwari		Yashwantrao Bhonsale	DENDRIMERS: A NOVEL APPROACH FOR TARGETED DRUG DELIVERY SYSTEMS
22138	Offline	Krishna Kumar Kashyap		Yashwantrao Bhonsale	PHYTOSOMES: A NOVEL APPROACH FOR HERBAL DRUG DELIVERY
22139	Offline	Suraj B. Nanaware		Yashwantrao Bhonsale	ETHOSOMES: A NOVEL APPROACH FOR TRANSDERMAL DRUG DELIVERY
22140	Offline	Varsha Patnaik		Yashwantrao Bhonsale	CARBON NANOTUBE: A REVIEW ON ITS MECHANICAL PROPERTIES AND APPLICATION
22141	Offline	Amit Gupta		Yashwantrao Bhonsale	FORMULATION DEVELOPMENT OF NOVEL EXTENDED RELEASE MUCOADHESIVE BUCCAL PATCHES
22142	Offline	Atul Singh		Yashwantrao Bhonsale	PRELIMINARY PHYTOCHEMICAL AND PHARMACOLOGICAL SCREENING OF *LENS CULINARIS* SEEDS
22143	Offline	Harshit Singh		Yashwantrao Bhonsale	EVALUATION OF *CARICA PAPAYA* EXTRACTS FOR ANTIMALARIAL ACTIVITY
22144	Offline	Yogesh Shivhare		Yashwantrao Bhonsale	ASSESSMENT OF APHRODISIAC ACTIVITY OF SOME INDIAN MEDICINAL PLANT EXTRACTS
22145	Offline	Rajeev Sharma		Yashwantrao Bhonsale	RELEASE PROMOTER-BASED NANOCOMPOSITE(S): FOR SITE SPECIFIC DELIVERY OF IMMUNOBIOACTIVE(S)
22146	Offline	Rakesh Nagar		Yashwantrao Bhonsale	EVALUATION OF HEMATOPOIETIC ACTIVITY OF VARIOUS EXTRACTS OF *PRUNUS DOMESTICA*
22147	Offline	Rakesh Kumar Saket		Yashwantrao Bhonsale	ASSESSMENT OF ANTI-ANXIETY ACTIVITY OF *MIMOSA PUDICA* EXTRACTS
22148	Offline	Shailendra Singh		Yashwantrao Bhonsale	FORMULATION AND *IN VITRO* EVALUATION OF FLOATING CAPSULE OF ANTACID DRUG
22149	Offline	Gaurav Gupta		Yashwantrao Bhonsale	FORMULATION AND EVALUATION OF ENTERIC COATED TABLETS OF DOMPERIDONE WITH ACID IMPERMEABLE POLYMERS
22150	Offline	Subodh V. Kamble		Yashwantrao Bhonsale	SYNTHESIS AND ANTIOXIDANT ACTIVITY OF SOME CONJUGATED CHALCONE DERIVATIVES
22151	Offline	Sunil Kushwaha		Yashwantrao Bhonsale	DEVELOPMENT AND CHARACTERIZATION OF MOUTH DISSOLVING HYDROXYZINE HCL TABLET WITH EXCIPIENTS