



National Level Online Conference on Innovations in Pharmaceutical and Biological Sciences (NLOCIPBS-2020)

**in association with
Kalinga Biomedical Research Institute
and Training Establishment (KBRITE),
Sambalpur, Odisha.**

29th & 30th August 2020

ABSTRACT BOOK

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About Conference

The National Level Online Conference on Innovations in Pharmaceutical and Biological Sciences organized by Sydus Publishing, Kerala in association with Kalinga Biomedical Research Institute and Training Establishment (KBRITE), Sambalpur, Odisha. Held on 29th & 30th August 2020

In this pandemic situation, Sydus Publishing, Kerala has come up with a National Level Online Conference on Innovations in Pharmaceutical and Biological Sciences in collaboration with Kalinga Biomedical Research Institute and Training Establishment (KBRITE), Sambalpur, Odisha, and e poster presentation competition.

In this event, around 680 participants have participated from across the country and there were participants from 5 other countries such as Malaysia, Oman, Nigeria, the Kingdom of Bahrain, and Ethiopia. In this conference, Pharma students, Academicians, Research scholars, Regulatory affairs professionals, Drug safety experts, Drug Control officers, Health care professionals, Pharmacists, and allied industries have participated.

The conference was inaugurated by Dr.Karthikeyan M, Convener, and Editor. In the inaugural speech, Dr. Karthikeyan M addressed recent advancement and development in the pharmaceutical and Biological field and emphasized the importance of the conference. The coordinator of the Conference, Dr. Deepa MK, welcomed the Participants.

On the first day, first session an eminent speaker, Dr. Balasubramanian T, Al Shifa College of Pharmacy, Kerala delivered an informative lecture on "Polycystic Ovarian Syndrome: A risk factor for Type 2 Diabetes " he described in the pathology, diagnosis, and management in detail. The second session was enriched with the lecture "Development of nanoparticle-based drug formulations and its impact in Disease Management" by Dr. Deepa MK, Associate professor Ashokrao Mane College of Pharmacy, Peth vadgaon, Kolhapur, Maharashtra. Where she briefed how various nanoparticles are prepared, characterized, and targeted to various sites and Impact in the disease management. Followed by online e Poster presentation competition, about 16 posters were presented by the main author in Innovations in Pharmaceutical and Biological Sciences. E-Posters Evaluation was done by Dr.T.Balasubramanian, Professor and Head, Al Shifa College of Pharmacy, Kerala, and Dr.A.Shanmugarathinam, Assistant Professor, Department of Pharmaceutical Technology, Bharathidasan Institute of Technology, Anna University, Tiruchirappalli. The results of E poster competition are as Position 1: Doppalapudi Sandeep, Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, AndhraPradesh.Position 2: Haripriya P.S, Nehru College Of Pharmacy, Kerala and Mohamed Afsal V C, College of Pharmaceutical Sciences, Government Medical College, Trivandrum, Kerala, and Position 3: Simrana Fathima. M , Sri Ramachandra Institute of Higher Education and Research (Deemed to be University), Chennai, Tamil Nadu and Desna.D.S, JDT Islam College Of Pharmacy, Kerala

The Second-day Third session includes lectures on "Scope of regulatory affairs" by Dr. Karunakara Reddy.T , Pharma industry, India where he briefed job opportunities in regulatory affairs, and the fourth session was enriched with the lecture "Advanced Techniques in Biosciences research" Dr. R.Nirmaladevi, Assistant Professor, Department of Biochemistry, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu. Where she briefed about the various advanced analytical instruments with the description of working principles and its applications.

In the valedictory function, the winning contestants were given E-certificates by dignitaries through online mode. Recap by Dr.Deepa MK and the Guest speech by Dr.Kalinga Biomedical Research Institute and Training Establishment (KBRITE), Sambalpur, Odisha, and Vote of thanks is given by Dr.Karthikeyan M, Convenor and editor.

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Antenatal Use of Corticosteroids to Prevent Respiratory Insufficiency in Preterm Babies

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ABSTRACT

Preterm birth is a risk factor in at least 50% of all neonatal deaths. India has the highest number of preterm births as well as neonatal deaths due to prematurity. Antenatal corticosteroid(ANC) treatment for women who are at risk of preterm delivery has emerged as the most effective intervention for the prevention of Respiratory Distress Syndrome(RDS), reducing early neonatal mortality and morbidity. To evaluate the use of ANCs in preventing RDS in preterm babies. A prospective 6th months study was conducted at Gynaecology and Obstetrics, Pediatric department of PKDAS Institute of Medical Sciences and Valluvanad hospital, Palakkad. All babies born alive before 37 weeks of gestation, were included in the study. The study population included 70 preterm babies. Among them, 28 belonged to group 0 (no ANC), 25 in group 1 (single dose of ANC) and 17 in group 2 (double dose of ANC). Babies whose mothers received two doses of ANC had a significantly lower incidence of RDS ($P=0.043$) than neonates whose mothers received a single dose of ANC ($P=0.343$). There is also some beneficial effect in babies born after 24 hours of single dose ANC administration. However, in some cases, babies developed RDS as only single dose was received and delivery occurred within 24 hours of ANC administration. A single complete course of ANC (2 doses of betamethasone 12 mg 24 hours apart) is efficacious than one dose of ANC in prevention of RDS.

KEY WORDS

Respiratory Distress Syndrome(RDS), Antenatal Corticosteroids(ANC), Preterm, Betamethasone

Assay of Tiagabine Hcl (Tia) Using Chromogenic Reagents By Spectrophotometric Methods

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ABSTRACT

Simple, accurate and reproducible UV-Visible spectrophotometric methods were established for the assay of TIA based on the redox reaction and internal salt formation. Redox reaction of the TIA with NBS/CB.reagent is proposed in method A. Method B includes internal salt formation of the TIA with Citric acid/ Acetic anhydride reagent. The optical characteristics such as Beers law limits, molar absorptivity and Sandell's sensitivity for the methods (A-B) are given. Regression analysis using the method of least squares was made to evaluate the slope(b), intercept(a) and correlation coefficient (r) and standard error of estimation (Se) for each system. Determination of TIA in bulk form and in pharmaceutical formulations were also incorporated

KEY WORDS : Redox reaction, Tiagabin, internal salt, Anticonvulsant, Spectroscopic method

Therapeutic Potential Of Capsaicin : A Review

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Abstract

Capsaicin is a naturally occurring alkaloid derived from chillies that is responsible for its hot pungent taste. It is an odourless fat soluble compound that is rapidly absorbed through the skin. Topically applied capsaicin is useful in alleviating pain associated with diabetic neuropathy and chronic musculoskeletal pain. Recent studies have shown that capsaicin has anti cancer , cardioprotective and anti obesity effects. Capsaicin once applied to the skin ,causes a brief initial sensitization followed by a prolonged desensitization of the local nerves. Capsaicin binds to the Transient Receptor Potential receptor Variant (TRPV) 1 (vanilloid receptor) which is expressed predominantly by sensory neurons. Capsaicin activates the TRPV receptors in sensory nerves and causes sensations that range from hotness to burning sensation. Following this, analgesia results from the depletion of substance P that leads to the desensitisation of small sensory neurons. capsaicin analogues and TRPV1 receptor antagonists are currently being investigated as therapeutic agents with improved efficacy and greater tolerability. Analogues of capsaicin and TRPV1 antagonists have been synthesised and provide some insight into the possible future therapeutic potential of these agents. Recent advances in the use of high dose topical capsaicin preparations hold promising in the management of wide ranges of painful conditions associated with peripheral neuropathies.

Key words : Capsaicin,TRPV1,neuropathy

Role Of PDE Inhibitors In Alzheimers Disease : A Review

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Abstract

Phosphodiesterase (PDEs) are enzymes that hydrolyse intracellular signalling molecules, namely cyclic adenosine monophosphate (cAMP) and cyclic guanosine monophosphate (cGMP), which are produced in response to different stimuli . Molecules that target PDEs have been used in various therapeutic applications. Alzheimer's disease (AD) is the most common type of dementia, which is characterized by progressive memory loss, a decline in language skills, and some other neurodegenerative disorders. . Since several PDE subfamilies are highly expressed in the human brain, the inhibition of PDEs is involved in neurodegenerative processes by regulating the concentration of cAMP and/or cGMP. PDEs are considered as promising targets for the treatment of AD since many PDE inhibitors have exhibited remarkable cognitive improvement effects in preclinical studies and over 15 of them have been subjected to clinical trials. PDE5is increase NO synthases, accumulate cGMP, and activate protein kinase G. These pathways play important roles in diseases such as AD, Parkinson's disease, and multiple sclerosis. Another novel mechanism through which PDE5is improve AD symptoms is by promoting gene transcription through activating cAMP response element-binding (CREB). Thus PDEis undoubtedly proves effect on cognitive enhancement in alzheimers disease.

Keywords: PDE inhibitors, Alzheimer's disease, cAMP

Advances In Cancer Immunotherapy – A Review

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Abstract

Immunotherapy has become an established pillar of cancer treatment improving the prognosis of many patients with a broad variety of hematological and solid malignancies. Check point inhibitors, chimeric antigen receptor (CAR) T cells, cancer vaccines and oncolytic virus therapy are the important types. Main targets for check point inhibitors are PD-1/PD-L1 and CTLA-4 pathways.CAR T cell therapy is a form of therapy that uses genetically altered T cells to fight cancer. For checkpoint blockade, current studies focus on combinational approaches, perioperative use, new tumor entities, response prediction, toxicity management and use in special patient populations. Regarding cellular immunotherapy, recent studies confirmed safety and efficacy of CAR T cells in larger cohorts of patients with acute lymphoblastic leukemia or diffuse large B cell lymphoma. Recently viruses have been used to target and attack tumors that have already formed. These viruses are known as oncolytic viruses and they represent a promising approach to treat cancer. Prophylatic and therapeutic cancer vaccines are also useful. Immunotherapy is more advantageous over chemotherapy because, it can boost the immune response In the body as well as teach the immune system how to identify and destroy cancer cells.We conclude that immunotherapy isundoubtedly, a promising approach for future cancer therapy.

Key words:CAR T cell,check point inhibitors,immunotherapy

Clinical and Toxicological Studies of Mung Bean Seed

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Abstract:

Seeds of Mung bean (*Vigna radiata* (L.)R.Wilczek) has been recognized as a 'Green pearl' of Asian cuisine due to abundance of dietary fibres, protein, minerals, vitamins and wide variety of bioactive agents. *Literature reveals very few clinical trials have been reported on the assessment of various biological activities of mung beans. This can be attributed to elements such as moral issues, limited business support, and the complicated chemical composition of the mung bean.* Literature has been collected through SciFinder, Web of Science, Google Scholar, Pubmed, and a library. This review shares updated information on the health benefits, pharmacology, and clinical and toxicological studies of Mung bean seeds. Bioactive components of mung bean seeds exhibited a wide array of activities such as anticancer, antihyperlipidemic, antihypertensive, antidiabetic, anti-microbial, antioxidant, treatment of alcoholism, reducing obesity, increasing muscular strength, rheumatism, piles, liver and neurological diseases. This curative potential highlighted its various beneficial outcomes in the field of drug research and increasing scientific interest in the clinical and toxicological studies. Existing literature authenticates the potential benefits of mung bean seeds from nutritional as well as medicinal perspective. This food grain needs to be explored for clinical and toxicological studies.

Keywords: Mung Beans seeds; Pharmacology; Clinical studies; Toxicology

Method development and validation of selective antihypertensive drugs in their combined tablet dosage form by using reverse phase high performance liquid chromatography.

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Abstract

The present research work describes the validated reverse phase high performance liquid chromatographic method for simultaneous estimation of Olmesartan Chlorthalidone, and Amlodipine drug in tablet dosage form. The quantification was carried out using Hypersil BDS C18 column (250mm x 4.6mm), 5µm and mobile phase comprised of Buffer, Acetonitrile and TEA in proportion of 80:20:0.1%v/v/v. The mobile phase flow rate was 1.0 ml/min and the eluent was monitored at 222 nm wavelength. The optimized chromatographic conditions were found to effectively to separate out Olmesartan, Chlorthalidone and Amlodipine drug at retention time of 3.807 min, 4.667 min and 6.887 min respectively. Linearity were found to be in range of 30-90 µg/ml, 1.25-3.75 µg/ml and 1-3 µg/ml for Olmesartan, Chlorthalidone and Amlodipine respectively. The percentage recoveries of all three drugs were found to be 99.27-99.81%, 99.57-99.99% and 99.22-99.44% for Olmesartan, Chlorthalidone and Amlodipine. The developed method is considered as stability indicating method in which acid stress study, base stress study, peroxide stress study, photo stress study and thermal stress study carried out and all degradation peaks are well separated out from peaks of main components Olmesartan, Chlorthalidone and Amlodipine in reverse phase high performance liquid chromatography system. The proposed method was found to be fast, accurate, precise and reproducible and can be used for simultaneous estimation of these drugs in tablet. A new analytical method is developed which is simple, accurate and less time consuming. The method is validated against system suitability, accuracy, precision, linearity, ruggedness, robustness, limit of detection, limit of quantification also the specificity with forced degradation study.

KEYWORDS: Olmesartan, Chlorthalidone and Amlodipine, Reversed-phase HPLC, Force

degradation.

NLOCIPBS-08

Preparation and Evaluation of Febuxostat Orodispersible Tablets using *Sterculia foetida* Seed Starch as Excipient

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Abstract

The present work is focused on formulation of Febuxostat orodispersible tablets by lyophilization technique using natural starch extracted from *Sterculia foetida* seeds. Starches were extracted using alkali method i.e., sodium hydroxide at 0.1%, 0.25% and 0.5% concentrations and water from *Sterculia foetida* seed powder. These starches were evaluated for phytochemical and physicochemical tests. Tablets were prepared using Febuxostat, *Sterculia foetida* seed starch and croscarmellose sodium in various concentrations using direct compression technique. Various pre and post-compression parameters were performed along with *in vitro* drug release studies, characterization studies like FTIR, DSC, SEM, PXRD and accelerated stability studies. Phytochemical tests revealed the presence of only starch in all the extracts. The starch prepared from 0.1% sodium hydroxide (SFS2) showed best physicochemical properties. From *in vitro* dissolution studies, it was observed that formulations FS6 and FS12 containing 15% w/w of SFS2 and 15% w/w of croscarmellose sodium respectively showed faster disintegration and enhanced dissolution rate compared with other formulations. The lyophilized product FSL5 containing 12.5% w/w of SFS2 showed more drug release when compared to FS6. Fourier Transform Infra Red (FT-IR) spectroscopy and Differential Scanning Calorimetry (DSC) studies revealed that there were no major interactions between the drug and excipients. Powder-X Ray Diffraction (PXRD) studies revealed the nature of formulations. Thus the tablets prepared using *Sterculia foetida* seed starch by lyophilization technique revealed the superdisintegrant property of starch.

Keywords: *Sterculia foetida*, Febuxostat, Orodispersible tablets, Lyophilization, Croscarmellose sodium.

Computer aided drug design and chemsketch study of tolbutamide :An oral hypoglycemic agent

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Abstract

Computer aided drug design play a vital role in drug discovery and development and has become an Indispensable tool in pharmaceutical industry. Drug discovery include drug designing and development, software based drug discovery. Novel software based method such as molecular modelling, structure _based design. To overcome high cost, lengthy time duration it need to employ New and more cost effective drug discovery designing method. Such a software are further categories on the basis of task performing like autodock, chemsketch, schrodinger, etc. Autodock perform docking of the ligand with the target molecule which is a protein. Schrodinger was used for molecular modelling and well suited for drug designing. Chems sketch is a molecular modelling program used to create and modify images of chemical structure. Tolbutamide belongs to oral hypoglycemic agent used in treatment of DM2. It's a first generation sulfonylurease drug. chemsketch study of tolbutamide is informative in understanding various structure and physicochemical aspect of compound. 3D representation is also integrated in ACD /3D viewer.

Keyword: Tolbutamide, ACD/3D viewer, chemsketch

Glucagon-like peptide-1 Analogues and Thyroid Cancer: An Analysis of Spontaneous Cases Reported in the European Pharmacovigilance Database

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Abstract

The use of glucagon-like peptide-1 (GLP-1) analogues has been linked with the risk of thyroid cancer. Spontaneous reports can provide information about rare adverse events occurring after marketing of drugs. The objective of our study was to detect from European pharmacovigilance database i.e., Eudravigilance, a signal of thyroid cancer during GLP-1 analogues treatments in patients with type 2 diabetes. Herein, we analyzed all reports of thyroid cancer reported with GLP-1 analogues in Eudravigilance database from their first marketing authorization till 30th January 2020. The cases were identified with MedDRA version 22.1. A case/noncase method was used to assess the association between thyroid cancer and GLP-1 analogues, calculating proportional reporting ratios (PRRs) and their 95% confidence interval (CI) as a measure of disproportionality. In EudraVigilance database, to generate a safety signal, which is information on a new or known adverse event that is potentially caused by a drug, the lower bound of the 95% confidence interval (CI) of the PRR is required to be ≥ 1 and the number of individual cases to be ≥ 3 . There were 11243 cases of thyroid cancer and related preferred term (PTs) in the 6665794 reports recorded in EudraVigilance during the study period. GLP-1 analogues were involved in 236 cases. Exenatide, liraglutide, and dulaglutide met the criteria to generate a safety signal, suggesting that thyroid cancer is reported relatively more frequently in association with these drugs than with all other medicinal products. The association was strongest for liraglutide (113) followed by exenatide (N=76) and dulaglutide (35) with PRR of 27.5 (95% CI, 22.7-33.3); 22.5 (95% CI, 17.9-28.3), and 13.1 (9.4-18.3) respectively. This is the first study that showed disproportionality for GLP-1 analogues and thyroid cancer and found evidence from spontaneous reports that GLP-1 analogues are associated with thyroid cancer in patients with diabetes.

Keywords: Eudravigilance, Pharmacovigilance, Glucagon-like peptide-1 analogues, Thyroid cancer, Spontaneous reports.

Drugs Used To Alleviate Severity Of Novel Corona Virus Infection:A Review

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Abstract

The mysterious corona virus outbreak in the Chinese city Wuhan, now termed as COVID-19, and its fast spread to many other countries, endangers thousands of lives. The pandemic has catalysed the development of novel coronavirus vaccines across the biotech industry, both by pharmaceutical companies and research organizations. Although there is no product approved by the U.S. Food and Drug Administration (FDA) to treat coronavirus disease 2019 (COVID-19), many medications are being tested. One investigational drug called remdesivir has been authorized by the FDA for emergency use during the COVID-19 pandemic. The US Food and Drug Administration (FDA) approved limited emergency use for chloroquine and hydroxychloroquine as a treatment for COVID-19. Researchers are studying other potential treatments for COVID-19, including , antiviral drugs, **dexamethasone, anti-inflammatory therapy, Immune-based therapy, ACE inhibitors** ,amlodipine, ivermectin, losartan and famotidine. Russia has become the first nation to complete clinical trials of Covid-19 vaccine on humans, and the results have proven the medication's effectiveness against covid-19. Researchers involved with the ChAdOx1 nCoV-19 (oxford covid-19 vaccine) trials said the vaccine had shown signs of priming the rhesus macaque monkeys' immune systems to fend off the deadly virus and showed no indications of adverse effects. India is already developing two indigenous coronavirus vaccines, namely COVAXIN and ZyCoV-D. clinical trials of these vaccines have been fast-tracked and both the vaccine candidates are looking to complete their human trials by the end of 2020. Though there are treatments that can alleviate the symptoms – such as difficulty breathing – they do not address the underlying cause: the virus. passive immunization and convalescent sera are other methods of recent therapy.

Key words ; covid-19, remdesivir, vaccine

Salivary Biomarkers And Proteomics For Diagnostic And Clinical Utilities: A Review

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Abstract

Saliva is an exocrine secretion produced from the salivary glands and has numerous functions, such as cleansing and protection of oral cavity, antimicrobial effects and aids in digestion. Due to the speedy development in the field of Salivaomics, saliva is now well accepted as a pool of biological markers that vary from changes in biochemical, nucleic acids and proteins to the micro flora. Recent proteomic platforms have analyzed the human salivary proteome and characterized about 3000 differentially expressed proteins and peptides. Many salivary proteins are found to have elevated or decreased in many pathological conditions as per many researches. Hence the salivary fluid has much potency as that of blood or urine which are usually analyzed. Diagnosis and monitoring of a disease often requires painful invasive procedures such as biopsies and repeated blood draws, adding more stress to already unpleasant experienced patients. Like blood and tissue biopsies, oral fluids can be a source of biochemical data capable of detecting diseases, not only restricted to local disorders like oral cancer and Sjögren's syndrome, but systemic pathologies like genetic, autoimmune, cardiovascular and metabolic diseases as well as viral/bacterial infections and cancers. Saliva has also been used in the screening of the respiratory viruses among hospitalized patients without pyrexia or any other respiratory symptoms. Studies are going on to analyze the potential diagnostic of Covid-19 in saliva to develop rapid chair side tests for the detection of Covid-19.

Key words:- Salivaomics, Sjögren's syndrome, pyrexia, Covid-19.

Anti- Arthritic Effects Of *Spirulina platensis* In Collagen Induced Arthritic Rats

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Abstract

It has recently been reported that *Spirulina platensis*, a filamentous, multicellular microalga, exerts anti-inflammatory effects in collagen induced arthritic rats. The treatments were started from the 20th day post induction of arthritis, *S. platensis* (400 and 800 mg kg⁻¹) and methotrexate (0.3 mg kg⁻¹) was administered orally to arthritic rats up to 45th days. The change in arthritis score, paw thickness, body weight, ankle size, motor function, pain measurement and toe spread were measured as marker of anti-inflammation in female wistar rats. *S. platensis* significantly reduced the paw thickness, ankle size, pain, and normalized the body weight and motor function. These finding indicates that *S. platensis* has anti-inflammatory effects via modulation of multiple pathways of inflammation.

Key words: *Spirulina platensis*, Collagen induced arthritis, Anti-inflammation, and Phycocyanin.

Comparative study of synthetic and natural superdisintegrants on the formulation development of fast dissolving tablets containing macrolide antibiotic by direct compression technique.

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ABSTRACT

The aim of the present research work is to “Compare the impact of synthetic and natural superdisintegrants on the formulation development of Fast Dissolving Tablets Containing macrolide antibiotic by direct compression technique”. In the present study an attempt was made to prepare Fast Dissolving Tablets of Azithromycin by Direct Compression technique using synthetic superdisintegrants such as Sodium Starch Glycolate (1:2:3) , Croscarmellose sodium (1:2:3) and natural superdisintegrant such as Plantago ovate mucilage. Totally nine formulations were prepared (S I – S III), (C I – C III), (P I – P III). During the preparation, the powder blends of all the nine formulations were evaluated for various pre compression parameters such as angle of repose, bulk density, tapped density and carr’s index. The findings of all the pre compression parameters were within the prescribed limits. The prepared tablets of all the nine formulations were evaluated for various post compression parameters such as weight variation, hardness, thickness, friability, wetting time, disintegration time and drug content. The findings of all the post compression parameters were within the prescribed limits. From all the nine formulations, Fast Dissolving Tablets prepared with natural super disintegrant shows higher percent drug release than synthetic super disintegrants. Among the three formulations of natural superdisintegrant, the formulation P-III shows higher percent of drug release than the P-I & P-II, due to the increased concentration of natural super disintegrant which leads to decreasing the disintegration time and increasing the dissolution time of the drug. Based on the lower disintegration time and higher percent of drug release, the formulation P-III was subjected to accelerated stability study as per ICH guidelines at 40°C ±2°C/75% RH ±5% for three months. The tablets were tested at different time interval (30, 60 and 90 days) for percentage of drug release and it was observed that no remarkable changes were found in the percentage of drug release from P-III after the stability study. Hence the formulation P-III is considered as more stable and the best novel formulation.

Keywords: Fast Dissolving Tablets, Azithromycin, Plantago ovata mucilage, direct compression, sodium starch glycolate and croscarmellose sodium.

Liposome as smart nanocarriers and its smartness in tumor targeting

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Abstract

Advancement in nanotechnology and understanding of cancer biology have led to significant progresses in emerging tumor-targeted drug delivery nanocarriers. Nano carriers, a wonder of modern science, play vital roles in biomedical applications, especially in anti-cancer drug delivery. Delivery of chemotherapeutic agents by functionalized smart nanocarriers could protect the drugs from rapid cleansing process of the body's immune system, prolong the circulating time and also they release the cargo at the targeted site at the right concentration under external or internal stimulation and increase the drug concentration at tumor sites, thus enhancing the therapeutic efficacy and reducing side effects. Various drug delivery nanocarriers such liposomes, micelles, dendrimers, meso-porous silica nanoparticles, gold nanoparticles, super paramagnetic iron-oxide nanoparticles, carbon nanotubes, and quantum dots have been developed as smart nanocarriers in order to accumulate the drug at the targeted site. They should be capable of co-delivering chemotherapeutics and other substances, such as genetic materials, imaging agents. This current review briefly describes the types of commonly used nanocarriers in tumor treatment, and given a special emphasis on the smartness of liposome in for tumor-targeted delivery and controlled release of drugs. The current field of liposomes focuses on both therapeutic and diagnostic applications. This view helps to understand the researcher about recent advances in liposome research in tumor targeting and insight new ideas to develop more effective tumor therapy.

Keywords: liposome, smart nanocarriers, active targeting, passive target and tumor targeting.

A review on Synthesis of Novel Heterocyclic Derivatives of Chalcones as Potent Pharmacologically Active Molecule

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ABSTRACT

Chalcones are also known as benzyl acetophenone or benzylidene acetophenone. It is chemically 1,3-diphenylprop-2-en-1-one. Chalcone is one of the secondary metabolite compounds which are of interest due to their various biological activities such as anti-microbial, anti-fungal, anti-cancer, anti-malarial, anti-oxidant, anti-tumour, anti-inflammatory and anti-depressant. Chalcone is also an important precursor for biosynthesis of flavanoids and isoflavanoids and also several heterocyclic compounds such as Benzodiazepines, Pirazolone, Flavone and Aurone. Chalcones have two aromatic rings connected by three carbon, α,β unsaturated in carbonyl compounds system. The synthesis of various classes of heterocyclic derivative of chalcones and their possible biological activities have been reviewed. Chalcones have also been reported to show excellent inhibition of lipoxygenase, making this class of compound good antioxidant agent. In the treatment of gastrointestinal syndromes and sepsis, the successful application of microwave and grinding technique in the synthetic methodologies makes the synthesis environmentally friendly and economically viable. This article presents the synthesis of various classes of chalcones with therapeutic applications for further modifications so as to further exploit their broad biological applications. The relatively easy synthetic methodologies of this compound calls for further exploitation of their pharmacological possibilities in this era of emerging drug resistance.

Key words: Chalcones, Pyrazolines, Heterocyclic derivatives, Pharmacological activity

