PHONE: 08415-200326, 040-27037328
CELL: 9000611217

PRINCETON COLLEGE OF PHARMACY

(Affiliated to JNTUH & Approved by AICTE, PCI, New Delhi)
Chowdaryguda, Korremula (V), Ghatkesar (M), Medchal (Dist.)-500 088

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Chowdariguda (V), Korremula, Ghatkesar (M), Medchal (D), TS- 500088.

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Ocular Preparations- The Formulation Approach

Zareena Begum shaik
Princeton College of Pharmacy

ABSTRACT

The main aim of pharmacotherapeutics is the attainment of an effective drug concentration at the intended site of action for a sufficient period of time to elicit the response. A major problem being faced in ocular therapeutics is the attainment of an optimal concentration at the site of action. Poor bioavailability of drugs from ocular dosage forms is mainly due to the tear production, non-productive absorption, transient residence time, and impermeability of corneal epithelium. This article reviews: (1) the barriers that decrease the bioavailability of an ophthalmic drug; (2) the objectives to be considered in producing optimal formulations; and (3) the approaches being used to improve the corneal penetration of a drug molecule and delay its elimination from the eye. The focus of this review is on the recent developments in topical ocular drug delivery systems, the rationale for their use, their drug release mechanism, and the characteristic advantages and limitations of each system. In addition, the review attempts to give various analytical procedures including the animal models and other models required for bioavailability and pharmacokinetic studies. The latter can aid in the design and predictive evaluation of newer delivery systems. The dosage forms are divided into the ones which affect the precorneal parameters, and those that provide a controlled and continuous delivery to the pre- and intraocular tissues. The systems discussed include: (a) the commonly used dosage forms such as gels, viscosity imparting agents, ointments, and aqueous suspensions; (b) the newer concept of penetration enhancers, phase transition systems, use of cyclodextrins to increase solubility of various drugs, vesicular systems, and chemical delivery systems such as the prodrugs; (c) the developed and under-development controlled/continuous drug delivery systems including ocular inserts, collagen shields, ocular films, disposable contact lenses, and other new ophthalmic drug delivery systems; and (d) the newer trends directed towards a combination of drug delivery technologies for improving the therapeutic response of a non-efficacious drug. The fruitful resolution of the above-mentioned technological suggestions can result in a superior dosage form for both topical and intraocular ophthalmic application.

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Drug Bioavailability

ThanduRajini
Princeton College of Pharmacy

ABSTRACT

Bioavailability refers to the extent a substance or drug becomes completely available to its intended biological destination(s). More accurately, bioavailability is a measure of the rate and fraction of the initial dose of a drug that successfully reaches either; the site of action or the bodily fluid domain from which the drug's intended targets have unimpeded access. For majority purposes, bioavailability is defined as the fraction of the active form of a drug that reaches systemic circulation unaltered. This definition assumes 100% of the active drug that enters systemic circulation will successfully reach the target site. However, it should be appreciated that this definition is not inclusive of drugs that do not require access to systemic circulation for function (i.e., certain topical drugs). The bioavailability of these drugs is measured by different parameters discussed elsewhere.

Evaluation Of Innovated Formula Of Bisacodyl Suppository Following The Dissolution Profile And Stability Data By Using Developed Hplc

ChinnabathiniAnilkumar

Princeton College of Pharmacy

ABSTRACT

Bisacodyl is a laxative drug, used in the treatment of constipation. It is soluble in mineral acids but it is practically insoluble in distilled water, therefore; dissolving of Biscodyl in alkaline medium is a very difficult task. So, the objective of this study was to develop a proper dissolution method for a new formulation of the Bisacodyl suppositories in a rectal-simulated medium. Most of the preparation products of bisacodyl suppositories will produce low percentages of dissolution in the alkaline phosphate buffer (pH 7.2).Complex preparation inclusion of Bisacodyl with the solubilizing agent beta-cyclodextrin will be integrated into the suppository base. A developed and validated HPLC method has been carried out for quantitative analysis of Bisacodyl in the suppositories.

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Polyoxyethylated Nonionic Surfactants And Their Applications In Topical Ocular Drug Delivery

UjjwalaKonduru
Princeton College of Pharmacy

ABSTRACT

Topical dosing of ophthalmic drugs to the eye is a widely accepted route of administration because of convenience, ease of use, and non-invasiveness. However, it has been well recognized that topical ocular delivery endures a low bioavailability due to the anatomical and physiological constraints of the eye which limit drug absorption from the pre-corneal surface. Nonionic surfactants as versatile functional agents in topical ocular drug delivery systems are uniquely suited to meet the challenges through their potential ability to increase bioavailability by increasing drug solubility, prolonging pre-corneal retention, and enhancing permeability. This review attempts to place in perspective the importance of polyoxyethylatednonionic surfactants in the design and development of topical ocular drug delivery systems by assessing their compatibility with common ophthalmic inactive ingredients, their impact on product stability, and their roles in facilitating ocular drugs to reach the target sites.

A Review: COVID-19 Vaccine Development

HarikiranLingabathula
Princeton College of Pharmacy

ABSTRACT

At the time of writing, the SARS-CoV-2 virus has infected more than 49 million people causing more than 1.2 million deaths worldwide since its emergence from Wuhan, China in December 2019. Vaccine development against SARS CoV than 10 vaccines being tested in phase III clinical trials, as of November 2020. However, critical to vaccine development is response elicited as well as biological features of the vaccine and both need to be evaluated thoroughly. Tuberculosis is also a major infectious re of worldwide prevalence and the vaccine development for tuberculosis has been ongoing for decades. In this review challenges and complications in tuberculosis vaccine development, which may also be relevant for, and inform, COVID 19 vaccine development.

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Targeted Drug Delivery System – An Overview

Thejovathi.B

Princeton College of Pharmacy

ABSTRACT

Nowadays, most of the dosage form has a poor pharmacokinetic and biopharmaceutical properties. Hence there is need to develop a suitable drug system that distributed the active drug molecule only to the site of action, without affecting other tissues or organs. Targeted drug delivery is a method of delivering drugs to the patients at the targeted site or the site of action. This improves efficacy of treatment by reducing side effects of the drug administered. The inherent advantage of this technique leads to administration of required. drug with reduced dose and reduced its side effects.Drug targeting is a new drug delivery system that aims to deliver the drug to the target site of action or site of absorption without releasing the drug at any other non-target site. The delivery system is designed to retain the intact drug without any modification until reaching and releasing at the target site. The targeted drug delivery systems have several advantages over conventional ones as improvement of pharmaceutical activity, low side effects and reduction of the administered dose. The main purpose of the targeted drug delivery system is to obtain the pharmacological action of the therapeutic agent at diseased organs only without affecting the healthy one especially in the case of cancer treatment with chemotherapeutic agents.

Review On-Polycystic Ovary Syndrome

Banuvari Sandeep

Princeton College of Pharmacy

ABSTRACT

A sizable fraction of the world's population is affected by the infertility disorder polycystic ovarian syndrome (PCOS), which is frequent. It is the most prevalent endocrinopathy affecting reproductive-aged women, with a prevalence of 8–13 percent depending on the criteria used and population studied. It is the primary cause of anovulatory infertility in women. Due to the disease's complex multifactorial nature and overlapping symptoms, diagnosis is frequently challenging. PCOS's aetiology has been linked to numerous causes. Since there are numerous pathways and proteins involved in the pathophysiology, it is impossible to develop a single genetic diagnostic test. Although improvements have been made in PCOS car e and diagnosis, little is understood about the underlying biological mechanisms and signalling networks. PCOS is a polygenic and complex syndromic condition, in conclusion.PCOS has been linked to numerous genes that, either directly or indirectly, impair fertility. However, research on PCOS patients from various families was unsuccessful in identifying a completely penetrant variation (s). Reviewing the current genetic understanding of the disease was the goal of the current investigation. The clinical gamut, the genetics, and the discovered variations linked to PCOS have all been covered in this review. It is yet unknown how the genetic variations that cause PCOS increase risk as

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well as how the physical and genetic components of the condition interact with one another. Our grasp of the pathophysiology of PCOS will undoubtedly grow as genetic players and cellular pathways that underlie this condition are revealed. The research also evaluates the state of the present in PCOS.

Quantitative Estimation of Oseltamavir by UV-Visible spectrophotometric Method a REVIEW

KadasiSundeep
Princeton College of Pharmacy

ABSTRACT

Oseltamivir is an antiviral medication used to treat influenza A and B.This UV method was developed using methanol as a solvent.In the method, the wavelength selected for the analysis was found to be 220nm. UV visible double beam spectrophotometer (syntronic2201) was used to carry out a spectral analysis. The absorbance of different serial dilutions was checked in the UV spectrophotometer at a wavelength of 220nm.The calibration curve was plotted by taking the concentration of oseltamivir on the x-axis and absorbance on y-axis.

ROLE OF NANOMEDICINE FOR COVID19 - A REVIEW

VaishnaviMunnangi
Princeton College of Pharmacy

ABSTRACT

COVID – 19 has been proved to spread a pandemic over the world within a few years.WHO declared COVID -19, which was caused by a new coronavirus, a global pandemic.Humans have been infected with seven distinct coronaviruses, three of which have caused significant outbreaks, namely MERS-CoV, SARSCoV, and SARS-CoV-2.According to phylogenetic study of the genomes, recombination between SARS-like CoVs from pangolin and bat could have resulted in the creation of SARS-CoV-2 and COVID-19 epidemics. There are sixteen putative non- structural proteins including proteases, RNA- dependent RNA polymerase, helicase, other proteins involve in the transcription and replication of SARS-CoV-2 and four structural proteins, including spike protein(S), envelope (E), membrane (M), and nucleocapsid (N). With a high viral load in the body, SARS-CoV-2 infection causes a cytokine storm that damages the human lungs, especially in the elderly and those with immunosuppressive illnesses.Several medications have been repurposed and put to use.COVID-19 has been treated with a variety of techniques, including antiviral, antibacterial, and antimalarial drugs.Clinical trials are underway to develop effective vaccines, and some vaccines that have been approved for treatment, such as COVISHIELD, COVAXIN, ASTRA ZENACA, and SPUTNIK V vaccines, are being used to develop

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antibodies against COVID-19. However, due to the spread of virus variants, these vaccines are not expected to be 100 percent protective against the virus. With the help of nanotechnology's. The therapy of SARS-CoV-2 can be rendered more effective by targeting the viral cell directly and altering the genetic material's function. We summarized the function of nanomedicine in the treatment of SARS-CoV-2 in this review.

New Flavonol Glycosides From Aconitum Burnatii Gáyer And Aconitum Variegatum L

KokkulaSatyanarayana
Princeton College of Pharmacy

ABSTRACT

Six flavonol glycosides, compounds 1-3 from A. burnatiiGáyer and 4-6 from A. variegatumL.,were obtained from their methanol extracts of aerial parts. The identified structures were quercetin3-O-β-D-glucopyranoside-7-O-(6-E-p-coumaroyl)-β-D-glucopyranosyl-(1→3)-α-L-rhamnopyranoside(1),quercetin3-O-β-D-glucopyranoside-7-O-β-D-glucopyranosyl-(1→3)-α-L-rhamnopyranoside(2),quercetin3-O-β-D-glucopyranoside-7-O-(6-E-caffeoyl)-β-D-glucopyranosyl-(1 → 3)-α-L-rhamnopyranoside (3),kaempferol 3-O-β-D-galactopyranoside-7-O-α-L-arabinopyranoside (4), quercetin 3-O-β-D-glucopyranoside (5), and kaempferol 3-O-β-D-glucopyranoside (6). Compounds 1, 2 and 4 were isolated for the first time. The antioxidant potential of the methanol extracts and pure compounds was tested with different assays.

Synthesis, Characterization And Evaluation Of The Bacterial, Antioxidant And Anticancer Activity Of Pyrimidine Derivatives

HariprasadKadiyam

Princeton College of Pharmacy

ABSTRACT

In this paper, heterocyclic hexagonal rings were prepared for pyrimidine derivatives [I9-I16] by reacting a mole of gluconate derivatives with a mole of cyanoguanidine and using ethanol as a solvent. The biological activity of some prepared compounds and on two types of pathogenic bacteria, one of which is Gram-positive, which is Staphylococcus aureus, and one of which is Gram-negative, which is Escherichia coli, was studied. And the culture medium of the Multer Hinton Agar type was used, and chemical solutions were prepared for the two compounds (I9, I16) with concentrations (0,01, 0.001, 0.0001) mg /ml using a solvent dimethyl sulfoxide (DMSO). The sensitivity test of bacterial isolates used in the study was carried out by diffusion method, and the antibiotic Ciprofloxacin was used as a control sample. The effect of compound I15 on the removal of free radicals was also studied using DPPH root and at different concentrations.

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Antimicrobial and antioxidant flavonoids from the leaves of OncobaspinosaForssk. (Salicaceae)

SurendarAngothu
Princeton College of Pharmacy

ABSTRACT

Naturally occurring flavonoids have been reported to possess various pharmacological properties. The aim of this study was to evaluate the antimicrobial and antioxidant activities of the MeOH extract and flavonoids from the leaves of Oncobaspinosa, a plant used for the treatment of syphilis, wounds and sexual impotence.

A Review Article On Non-Steroidal Anti-Inflammatory Medications

U.Anilkumar

Princeton College of Pharmacy

ABSTRACT

Non-steroidal anti-inflammatory drugs, are one of the maxima typically prescribed ache medicinal drugs. It is a quite powerful drug magnificence for ache and inflammation; however, NSAIDs are acknowledged for a couple of damaging effects, together with gastrointestinal bleeding, cardiovascular aspect effects, and NSAID precipitated nephrotoxicity. As our society ages, it's far critical to have complete understanding of this magnificence of drugs in the aged population. [1]. They are liable for about 5-10% of all medicinal drugs prescribed every year [2]. The incidence of NSAID use in sufferers over sixty-five years vintage is as excessive as 96% withinside the well-known exercise setting [3]. Approximately 7.3% of aged sufferers over 60 years vintage crammed as a minimum one NSAID prescription in twelve months period [4]. In addition to their anti-inflammatory impact, NSAIDs have antipyrexic and analgesic properties. These medicinal drugs inhibit Cyclooxygenases (COXs) enzymes, which might be rate determining enzymes for prostaglandins and different prostanoids synthesis, consisting of thromboxanes. Compared with Nonselective NSAIDs that inhibit each COX-1 and COX-2, COX-2 inhibitors (as referred to as coxibs) inhibit handiest COX-2 enzymes. COX-2 performs greater of a function in prostaglandin mediated ache and inflammation, at the same time as COX-1 performs a few housework function withinside the safety of gastric mucosa and in platelet hemostasis. While the gastro intestinal protection profiles of COX-2 inhibitors have improved, the cardio-nephrotoxic negative consequences are nevertheless significant,latest literature famous that there is probably useful roles of the anti-inflammatory impact of NSAIDs in objectives consisting of development in cognitive function.

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Antimicrobial And Antioxidant Activity Of Kaempferol Rhamnoside Derivatives From Bryophyllum Pinnatum

SagarGattuvelli

Princeton College of Pharmacy

ABSTRACT

Bryophyllumpinnatum (Lank.) Oken (Crassulaceae) is a perennial succulent herb widely used in traditional medicine to treat many ailments. Its wide range of uses in folk medicine justifies its being called "life plant" or "resurrection plant", prompting researchers' interest. We describe here the isolation and structure elucidation of antimicrobial and/or antioxidant components from the EtOAc extract of B. pinnatum.

Antibacterial, Antifungal And Antioxidant Activities Of Whole Plant Chemical Constituents Of Rumex Abyssinicus

P.Srikanth

Princeton College of Pharmacy

ABSTRACT

Antibiotic resistance has contributed to the burden of infectious diseases both in the hospital and community setting, and represents a great threat to public health. Previous studies have revealed the role of reactive oxygen species as intermediate mediators of tissue damage, following antibiotherapies, indicating the need of associating antioxidants to these treatments. Therefore, the present work was designed to study the antibacterial, antifungal and antioxidant activities of extracts and compounds from RumexabyssinicusJacq. (Polygonaceae), as well as to investigate the antibacterial mechanisms of action of the most effective agents.

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DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR THE ESTIMATION OF RASAGILINE TABLET DOSAGE

MS.Yashashwini

Princeton College of Pharmacy

ABSTRACT

An accurate and precise HPLC method was developed for the determination of rasagiline. Separation of the drug was achieved on a reverse phase C18 column using a mobile phase consisting of phosphate buffer and acetonitrile in the ratio of 50:50 v/v. The flow rate was 0.5 ml/min and the detection wavelength was 210 nm. The linearity was observed in the range of 10-125 µg/ml with a correlation coefficient of 1.000. The proposed method was validated for its linearity, accuracy, precision and robustness. This method can be employed for routine quality control analysis of rasagiline in tablet dosage forms.

Correlation Of Glucosinolate Content To Myrosinase Activity In Horseradish (Armoracia Rusticana)

MS Sunil Priyanka

Princeton College of Pharmacy

ABSTRACT

Fully developed horseradish (ArmoraciarusticanaGaertn.,Mey., &Scherb.) roots from 27 accessions and leaves from a subset of 9 accessions were evaluated for glucosinolates and myrosinase enzyme activity. Eight different glucosinolates were detected (based on HPLC retention times as desulfoglucosinolates) in both root and leaf tissues. The sum of these glucosinolates, referred to as total, ranged from 2 to 296 micromolg(-1) of dry weight (DW) in both tissues. Four glucosinolates (sinigrin, glucobrassicin, neoglucobrassicin, and gluconasturtiin) were detected in major quantities. In fully developed roots, sinigrin concentration represented approximately 83%, gluconasturtiin approximately 11%, and glucobrassicin approximately 1% of the total glucosinolates. Approximately the same proportions of individual glucosinolates appeared in fully developed leaves, except that glucobrassicin was substituted by neoglucobrassicin and gluconasturtiin concentration was significantly lower (<1%). At least four other glucosinolates were detected in very small quantities (<1%) in both roots and leaves. Myrosinase (beta-thioglucosideglucohydrolase, EC 3.2.3.1) is the enzyme responsible for the hydrolysis of the parent glucosinolates into biologically active products. Data showed no correlation between myrosinase activity and total and/or individual glucosinolates in the roots. Glucosinolates content and myrosinase activity were also correlated in young and fully developed roots and leaves and during tissue crushing.

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Evaluation Of Anticancer, Antibacterial And Antioxidant Properties Of A Medicinally Treasured Fern Tectaria Coadunata With Its Phytoconstituents Analysis By Hr-Lcms –Review

G.Bikshapathi

Princeton College of Pharmacy

ABSTRACT

Tectariacoadunata (T. coadunata) is an important fern species with a number of medicinal properties. It has been evidently found for its effectiveness in ethanomedicinal usage, which can also emerge as one of the most promising sources for nutraceuticals.

Enhanced Transdermal Delivery Of Ketoprofen From Bioadhesive Gel

Ch.Srishar

Princeton College of Pharmacy

ABSTRACT

The aim of this study was to evaluate and compare the in vitro and in vivo transdermal potential of bioadhesive gels of ketoprofen by using gelling polymers like sodium carboxymethylcellulose, xanthan gum, poloxamer 407 and carbopol 934P as bioadhesive polymer with and without penetration enhancer (oleic acid). The effect of oleic acid as a penetration enhancer was examined when it was added to the bioadhesive formulations. Carrageenan induced rat paw edema model was used to investigate there in vivo performance. The commercial formulation of ketoprofen was used as a reference formulation. The in vitro permeation studies indicate that ketoprofenbioadhesive gel of poloxamer 407 with penetration enhancer was superior to gels of sodium carboxymethylcellulose and xanthan gum with penetration enhancer (oleic acid). The permeation rate of ketoprofen from poloxamer 407 based bioadhesive gel with 15% v/w penetration enhancer was higher than the permeation rate of sodium carboxymethylcellulose and xanthan gum based bioadhesive gel with 15% v/w penetration enhancer. In the paw edema test poloxamer 407 based bioadhesive gel with 15% v/w penetration enhancer showed the best permeation and effectiveness. The in vitro and in vivo studies showed that bioadhesive gels of ketoprofen could be used for effective therapy.

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Major Phytochemicals: Recent Advances In Health Benefits And Extraction Method

Sunithachintala

Princeton College of Pharmacy

ABSTRACT

Recent scientific studies have established a relationship between the consumption of phytochemicals such as carotenoids, polyphenols, isoprenoids, phytosterols, saponins, dietary fibers, polysaccharides, etc., with health benefits such as prevention of diabetes, obesity, cancer, cardiovascular diseases, etc. This has led to the popularization of phytochemicals. Nowadays, foods containing phytochemicals as a constituent (functional foods) and the concentrated form of phytochemicals (nutraceuticals) are used as a preventive measure or cure for many diseases. The health benefits of these phytochemicals depend on their purity and structural stability. The yield, purity, and structural stability of extracted phytochemicals depend on the matrix in which the phytochemical is present, the method of extraction, the solvent used, the temperature, and the time of extraction.

Silver Nanoparticles, A New Nanoweapon Against Cancer

Shireesha Bandirala

Princeton College of Pharmacy

ABSTRACT

New modifications in nanoparticles changed their applications obviously. Green synthesis of nanoparticles and their biomedical utilizations have been the focus of increasing attention in recent years. Silver nanoparticles (AgNPs) demonstrated surprising effects and many advantageous features for cancer therapy. Investigations indicated the anticancer activity of AgNPs in different ways, comprising cell cycle arrest, DNA damaging and apoptosis, alteration of P53 function, up/down regulation of some important cytokine genes and so on. But some key inquiries like the ability to control the accidental effects of AgNPs, or encompassing process for parcels, which reduces the toxicological profile of nanoparticles, still remained. "Green synthesis" of nanoparticles has been shown to be a kind of approach to resolve the toxicity amounts in a range of 10-18 times. Using distinctive properties of this approach, i.e. as green synthesized silver nanoparticles (G-AgNPs), in order to raise potential therapeutic efficacy, even up to two-fold higher than cis-platin, is going to play a crucial role in cancer treatment and could be considered as a new insight in this field. The current review focuses on the antioxidant activity of G-AgNPs and potential impacts on cancer cells.

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Rp-Hplc Anlaytical Method Development, Validation And Estimation Of Anagrelide Hydrochloride In Pharmaceutical Dosage Form

GOLLA LAVANYA

Princeton College of Pharmacy

ABSTRACT

A simple, fast and reproducible reverse phase liquid chromatography (RP-HPLC) method was developed for the determination of Anagrelide Hydrochloride in pharmaceutical dosage form. The method was developed Kromasil C18 column (150 x 4.6 mm; 5□m) and a diode array detector (Model 2996) was employed for the study **Mobile phase**: phosphate buffer (pH 2.5) - acetonitrile (75:25 v/v) with isocratic elution at a flow rate of 1 mL/min. System Suitability test were performed for the assurance of quality performance of method. The drug was subjected to accelerated degradation for photolytic, hydrolytic, thermal, oxidative conditions. The retention time of Anagrelide Hydrochloride was found to be 4.8 min. The method was validated for accuracy, precision, specificity, linearity, limit of detection, limit of quantitation and robustness as per ICH guidelines. All the parameters were within limits. The proposed method gave good resolution of Anagrelide Hydrochloride and its degradation products. The developed method can be used for the routine quality control analysis.

A Rapid And Precise Liquid Chromatographic Method For Simultaneous Determination Of Alpha Lipoic Acid And Docetaxel In Lipid-Based Nanoformulations

T.Nagaraju

Princeton College of Pharmacy

ABSTRACT

Combinational drug delivery successfully merges the benefits of nanotechnology and combination therapy by providing diversity to improve the carrier properties and better control over tailoring them as per the need of cancer treatment. A combination of conventional chemotherapeutic agent; docetaxel (DTX) and antioxidant agent; alpha lipoic acid (ALA) which acts by preventing metastasis may fulfill idealness of control and targeted drug delivery against breast cancer. The objective of the current study is to develop a reverse-phase HPLC-UV method for simultaneous determination of DTX and ALA in lipid-based nanoformulations. DTX and ALA were separated on Intersil® ODS (C18) column (250 × 4.6 mm, 5 µm) with a mobile phase consisting of acetonitrile: sodium acetate buffer (pH 3.5; 10 mM) (65:35% v/v) run in isocratic mode at a flow rate of 1 mL/min. The developed method was validated as per ICH guidelines. The method showed linearity in the concentration range of 1-15 µg/mL for DTX and 2-30 µg/mL for ALA. It can detect minimum 200 ng/mL of DTX and 500 ng/mL of ALA. The method was further successfully applied in lipid-based formulation characterization. In conclusion, a simple, accurate and precise reverse-phase HPLC-UV method was established for simultaneous determination of DTX and ALA in nanoformulations.

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Pharmacokinetic Consequences Of Plga Nanoparticles In Docetaxel Drug Delivery

Usha kondla

Princeton College of Pharmacy

ABSTRACT

Cancer chemotherapy is accompanied with administration of highly potent cytotoxic agents in doses that can result in non-specific drug toxicity and side effects. Chemotherapeutic agents possess limitations such as lack of water solubility, high volume of distribution, poor bioavailability, narrow therapeutic indices, multi-drug resistance, etc. that raise serious matters of concern regarding drug's pharmaceutical and clinical aspects. However, application of nanoparticles in delivery of anti-cancer agents has been a popular approach to address these concerns. Poly (lactide-co-glycolide) (PLGA), a biocompatible/biodegradable FDA-approved polymer has been widely used as drug carrier to enhance pharmaceutical/therapeutic properties of anticancer agents, prolonging their circulation time, targeting cancer tissues or protecting the drug from rapid elimination/premature degradation. This favourably modifies drug's pharmacokinetics and pharmacodynamics.

Analytical Quality By Design Approach In Rp-Hplc Method Development For The Assay Of Etofenamate In Dosage Forms

P.Ramya

Princeton College of Pharmacy

ABSTRACT

By considering the current regulatory requirement for an analytical method development, a reversed phase high performance liquid chromatographic method for routine analysis of etofenamate in dosage form has been optimized using analytical quality by design approach. Unlike routine approach, the present study was initiated with understanding of quality target product profile, analytical target profile and risk assessment for method variables that affect the method response. A liquid chromatography system equipped with a C18 column (250×4.6 mm, 5 µ), a binary pump and photodiode array detector were used in this work. The experiments were conducted based on plan by central composite design, which could save time, reagents and other resources. Sigma Tech software was used to plan and analyses the experimental observations and obtain quadratic process model. The process model was used for predictive solution for retention time. The predicted data from contour diagram for retention time were verified actually and it satisfied with actual experimental data. The optimized method was achieved at 1.2 ml/min flow rate of using mobile phase composition of methanol and 0.2% triethylamine in water at 85:15, % v/v, pH adjusted to 6.5. The method was validated and verified for targeted method performances, robustness and system suitability during method transfer.

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Biofilm Inhibition Mechanism From Extract Of Hymenocallis Littoralis Leaves

A.Madhusudhan Reddy

Princeton College of Pharmacy

ABSTRACT

Hymenocallislittoralis (Jacq.) Salisb. has been referred as beach spider lily and commonly known for its rich phytochemical diversity. Phytochemicals such as alkaloids, volatile constituents, phenols, flavonoids, flavonols extracted from different parts of these plants like bulbs, flowers, leaf, stem and root had been used in folk medicines from ancient times because of their excellent antimicrobial and antioxidant properties. The leaf and bulb extract of H. littoralis plant was traditionally used for wound healing. Alkaloids extracted from bulb of this plant possess anti-viral, anti-neoplastic and cytotoxic properties. However, these phytochemicals have also shown antibiofilm activity, which is considered as one of the important factor accountable for the drug resistance in microorganisms. Thus, the investigation of medicinal properties of H. littoralis could be useful to control biofilm producing pathogens.

Extract From Armoracia Rusticana And Its Flavonoid Components Protect Human Lymphocytes Against Oxidative Damage Induced By Hydrogen Peroxide

KokkulaSatyanarayana

Princeton College of Pharmacy

ABSTRACT

DNA damage prevention is an important mechanism involved in cancer prevention by dietary compounds. Armoraciarusticana is cultivated mainly for its roots that are used in the human diet as a pungent spice. The roots represent rich sources of biologically active phytocompounds, which are beneficial for humans. In this study we investigated the modulation of H_2O_2 genotoxicity using the A. rusticana root aqueous extract (AE) and two flavonoids (kaempferol or quercetin). Human lymphocytes pre-treated with AE, kaempferol and quercetin were challenged with H_2O_2 and the DNA damage was assessed by the comet assay. At first we assessed a non-genotoxic concentration of AE and flavonoids, respectively. In lymphocytes challenged with H_2O_2 we proved that the 0.0025 $mg \cdot mL^{-1}$ concentration of AE protected human DNA. It significantly reduced H_2O_2-induced oxidative damage (from 78% to 35.75%). Similarly, a non-genotoxic concentration of kaempferol (5 $\mu g \cdot mL^{-1}$) significantly diminished oxidative DNA damage (from 83.3% to 19.4%), and the same concentration of quercetin also reduced the genotoxic effect of H_2O_2 (from 83.3% to 16.2%). We conclude that AE, kaempferol and quercetin probably act as antimutagens. The molecular mechanisms underlying their antimutagenic activity might be explained by their antioxidant properties.

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Preparation And Characterization Of New Compounds For Schiff Base Derived From Furfural, Study Of Some Physical Applications And Evaluation Of Their Biological Activity

Golla Lavanya

Princeton College of Pharmacy

ABSTRACT

This research includes the preparation of Schiff bases from heterocyclic compounds using furfural by the traditional method (sublimation), where mono- and diamine compounds were used. The compounds were diagnosed using FT-IR, 1H-NMR, 13C-NMR, UV-Vis Mass, and SEM to determine the shape of the molecule and whether it is nanoscale. The biological activity that showed moderate to high inhibitory ratios were also evaluated, and measured the molar electrical conductivity of some of them was.

Comparison Of Performance Of C18 Monolithic Rod Columns And Conventional C18 Particle-Packed Columns In Liquid Chromatographic Determination Of Estrogel And Ketoprofen Gel

DayyalaLavanya

Princeton College of Pharmacy

ABSTRACT

The performance of monolithic HPLC columns Chromolith (made by Merck, Germany) and conventional C18 columns Discovery (Supelco, Sigma-Aldrich, Prague, Czech Republic) was tested and the comparison for two topical preparations Ketoprofen gel and Estrogel gel was made. The composition of mobile phases - for Ketoprofen analysis a mixture of acetonitrile, water and phosphate buffer adjusted to pH 3.5 (40:58:2) and for Estrogel analysis a mixture of acetonitrile, methanol, water (23:24:53) - was usually not optimal for analyses at all types of columns. Thus an adjustment of components ratio was necessary for sufficient resolution of the compounds analysed. Various flow rates (1.0-5.0 ml/min) and mobile phases (usually increasing ratio of water content) were applied. For Estrogel gel, following chromatographic conditions were found: using Chromolith Flash RP-18e monolith column, mobile phase was acetonitrile, methanol, water (13:24:63, v/v/v) and flow-rate 3.0 ml/min. Using monolith column ChromolithSpeedROD RP-18e, the mobile phase was acetonitrile, methanol, water (18:24:58, v/v/v) and flow-rate 4.0 ml/min. For the monolith column Chromolith Performance RP-18e, the mobile phase was acetonitrile, methanol, water (23:24:53, v/v/v), flow-rate 3.0ml/min. Analysis of Ketoprofen gel gave the best results using following analytical conditions: for monolith column Chromolith Flash RP-18e, mobile phase as a mixture of acetonitrile, water, phosphate buffer pH 3.5 (30:68:2, v/v/v) was used, at flow-rate 2.0 ml/min. For ChromolithSpeedROD RP-18e monolith column. Chromolith Performance RP-18e gave the best results.

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Antifungal And Antibacterial Activities Of An Alcoholic Extract Of Senna Alata Leaves

Harikiran. L

Princeton College of Pharmacy

ABSTRACT

Methanolic, ethanolic and petroleum ether extracts of Senna alata leaves were screened for phytochemicals, antibacterial and antifungal activities. Out of the three crude extracts, the methanolic extract showed the highest activity than the ethanolic and petroleum ether extracts. The unidentified active components purified from preparative thin layer chromatography exhibited low activities against Mucor, Rhizopus and Aspergillusniger at 70µg/ml while higher activity was exhibited against all the test organisms at 860µg/ml.

Hibiscus Rosa Sinensis Phytochemistry And Medicinal Uses

Usha kondla

Princeton College of Pharmacy

ABSTRACT

Hibiscus rosasinensis is known as China rose belonging to the Malvaceae family. This plant has various important medicinal uses for treating wounds, inflamation, fever and coughs, diabetes, infections caused by bacteria and fungi, hair loss, and gastric ulcers in several tropical countries. Phytochemical analysis documented that the main bioactive compounds responsible for its medicinal effects are namely flavonoids, tannins, terpenoids, saponins, and alkaloids. Experiment from recent studies showed that various types of extracts from all H. rosasinensis parts exhibited a wide range of beneficial effects such as hypotensive, anti-pyritic, anti-inflammatory, anti-cancer, antioxidant, anti-bacterial, anti-diabetic, wound healing, and abortifacient activities. The few studies on toxicity exhibited that most extracts from all parts of this plant did not show any signs of toxicity at higher doses according to histological analysis. However, some of the extracts did alter biochemical and hematological parameters. Therefore, further research must be conducted to isolate the phytochemicals and explore their specific mechanism of action. This review summarizes the phytochemistry, pharmocology, and medicinal uses of this flower with the purpose of finding gaps demanding for future research and investigating its therapeutic potential through clinical trials.

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Synergistic Effect Of Ethanol Leaf Extract Of Senna Alata And Antimicrobial Drugs On Some Pathogenic Microbes.

VaishnaviMunnangi
Princeton College of Pharmacy

ABSTRACT

The antimicrobial activities of ethanolic leaf extract of Senna alata against five bacteria (Staphylococcus aureus, Staphylococcus albus, Klebsiella pneumonia, Pseudomonas aeruginosa and Proteus mirabilis) and six fungi (Rhizopusspp, Penicillumoxalicum, Aspergillus tamari, Aspergillusniger, Fusariumoxysporum and Fusariumvacitilus) were examined using agar diffusion method. The result revealed that the ethanolic leaf extract had high inhibitory activity against S. albus, P. mirabilis and all the fungi tested. The eight antibacterial drugs produced varied reactions on the microbes with streptomycin having the highest inhibitory activity against all the bacteria. All the antifungal drugs used also produced high inhibitory activity against the fungi. The synergism between the extract and synthetic drugs produced higher inhibitory activity against the organisms. The photochemical screening of the plant revealed the presence of alkaloids, cardenolides, saponins, tannins and anthraquinones.

Analytical “Quality By Design” Approach In Rp-Hplc Method Development And Validation For Reliable And Rapid Estimation Of Irinotecan In An Injectable Formulation

Usha kondla

Princeton College of Pharmacy

ABSTRACT

The objective of the present study was to develop a robust, simple, economical and sensitive HPLC-UV method using the “quality-by-design” approach for the estimation of iri-notecan (IRI) in marketed formulations. RP-HPLC method was developed by applying Box-Behnken design with Hyper-Clone (Phenomenex®) C18 column (250 × 4.6 mm id, particle size 5 µm, ODS 130 Å) as a stationary phase. Acetonitrile and 20 mmol L–1 potassium phosphate buffer (pH 2.5) containing 0.1 % triethylamine in a ratio of 45:55 % (V/V) was used as a mobile phase. The sample was injected in a volume of 20 µL into the HPLC system. UV detector at 254 nm was used to estimate and quantify IRI. Isocratic elution was opted while the flow rate was maintained at 0.75 mL min–1. The retention time of IRI was found to be 4.09 min. The responses were found to be linear for concentration range of 0.5 to 18.0 µg mL–1 and the

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coefficient of determina-tion value was found to be 0.9993. Percent relative standard deviation for intra- and inter-day precisions was found in the range of 0.1 to 0.4 %. LOD and LOQ values were found to be 4.87 and 14.75 ng mL–1, resp. Robustness studies con-firmed that the developed method is robust with RSD of a maximum 0.1 %. The method is simple, precise, sensitive, robust and economical making it applicable to the estima-tion of IRI in an injectable formulation.

Chemical Constituents, Usage And Pharmacological Activity Of Cassia Alata

ShruthiDusa
Princeton College of Pharmacy

ABSTRACT

Cassia alata or locally known as KetepengCina (Indonesia) and Gelenggang (Malaysia) has been used as a traditional medicine to treat various diseases, especially skin diseases. In addition, *C. alata* has been reported to have potential anti allergic, anti inflammatory, antioxidant, anticancer, antidiabetic, and antifungal. Metabolite compounds that have been isolated from *C. alata* include flavones, flavonols, flavonoids glycosides, alatinon, alanonal and β-sitosterol-β-D-glucoside. The compounds have been isolated mainly from the leaves. Further identification is needed to discover the secondary metabolites from other parts of the plant such as seed, flower and bark which are reported to have potent antibacterial and antifungal activity. Therefore, this article highlights the secondary metabolites and biological activity of this plant which has been shown to have pharmacological properties against selected diseases.

Phytochemical Screening, Total Flavonoid And Phenolic Content Assays Of Various Solvent Extracts Of Tepal Of Musa Paradisiaca

HarikiranLingabathula
Princeton College of Pharmacy

ABSTRACT

The objective of this research is to conduct the preliminary phytochemical screening, total flavonoid and phenolic contents assays of various solvent extracts of tepal of Musa paradisiaca. Phytochemical screening was carried out according to the method of Trease and Evans, total flavonoid content was measured by the aluminium chloride colorimetric assay and total phenolic content was estimated spectrophotometrically by Folin-Ciocalteau method. - Preliminary phytochemical screening reveals the presence of phenolics, flavonoids, alkaloids, tannins, terpenoids in all the three different extracts (methanolic, ethanolic and aqueous). Tepal methanolic extract has the richest content of both phenolics and flavonoids i.e. (4.27 mg GAE/g and 0.25 mg QE/g) respectively, and aqueous extract was the least i.e. (1.32 mg GAE/g and 0.164 mg QE/g). All the extracts were not significantly different with one another ($p > 0.05$). It can be hypothesised that the high contents of phenolic compounds of tepals of Musa paradisiaca indicated that these compounds contribute to the antioxidant

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activity and can be regarded as promising plant species for natural sources of radical scavenging activity with potential value for treatment of many life threatening diseases.

Phytochemical Analysis Of Citrus Sinensis Peel

SunithaChintala
Princeton College of Pharmacy

ABSTRACT

Citrus Sinensis pulp was screened for its phytochemical composition. The aqueous as well as the ethanoic extracts of the pulp revealed the presence of carbohydrates, alkaloids, tannins, fixed oils and lipids, sugars, proteins, steroids, and amino acids whereas the terpenoids are present only in the ethanolic pulp extracts.

Phytochemical Screening And Diuretic Activity Of Allium Sativum Steroidal And Triterpenoid Saponin Fraction

PashamAnusha
Princeton College of Pharmacy

ABSTRACT

Allium sativum L. (Liliacea) is a perennial bulb with a tall, erect flowering stem. The bulb of the plant has been used in many parts of the world as a stimulant, carminative, antiseptic, expectorant, anthelmintic and diuretic. This study has been planned to assess the diuretic activity of fresh garlic bulb extract targeting the steroidal and triterpenoidalsaponin content. The rats were randomly divided into 4 groups of 5 animal each as vehicle control (2 % tragacanth suspension), standard drug frusemide (20 mg/kg, p.o), and n-butanol extract (10 mg/kg and 20 mg/kg, p.o) treated. Urine was collected in a graduated cylinder and its volume was measured for next 5 hr. Na^+, K^+ and Cl^- concentrations were measured. Phytochemical analysis of *A. sativum* n-butanol fraction showed presence of steroids, triterpenoidalsaponins and carbohydrates. At 20 mg/kg dose onset of diuresis and total volume of urine formed was significantly ($P<0.01$-0.05) higher. Fifth hour urine volume at 20 mg/kg dose was 9.3 ml as compared to 5.5 ml of control. Extract at 20 mg/kg dose produced 24.57% increase in Na^+ excretion against 132.65% increase by frusemide when compared to control signifying natriuretic and aquaretic response. The study confirmed the ethnopharmacological and Ayurvedic use of *A. sativum* as a diuretic agent.

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Flavonoids-Rich Plant Extracts against *Helicobacter pylori* Infection as Prevention to Gastric Cancer

MadhusudhanReddy.A

Princeton College of Pharmacy

ABSTRACT

Gastric cancer is the fifth most common and fourth type to cause the highest mortality rates worldwide. The leading cause is related to *Helicobacter pylori* (*H. pylori*) infection. Unfortunately, current treatments have low success rates, highlighting the need for alternative treatments against carcinogenic agents, specifically *H. pylori*. Noteworthy, natural origin products contain pharmacologically active metabolites such as flavonoids, with potential antimicrobial applications.

Extraction And Quantification Of Polyphenols From Kinnow (Citrus Reticulate L.) Peel Using Ultrasound And Maceration Techniques

RoopaniMadhu
Princeton College of Pharmacy

ABSTRACT

An investigation was carried out to extract polyphenols from the peel of kinnow (Citrus reticulate L.) by maceration and ultrasound-assisted extraction (UAE) techniques. The antioxidant potential of these polyphenols was evaluated using ferric reducing antioxidant power (FRAP), 2,2-diphenyl-1-picrylhydrazyl (DPPH), and superoxide radical scavenging assays; and their antimicrobial activity was assessed against bacterial strains Staphyloccoccusaureus, Bacillus cereus, and Salmonella typhimurium. The highest extraction yield was obtained through the solvent ethanol at 80% concentration level, whereas UAE was a more efficient technique and yielded comparatively higher polyphenol contents than maceration. Maximum polyphenols were extracted with 80% methanol [32.48 mg gallic acid equivalent (GAE)/g extract] using UAE. Elevated antioxidant activity of kinnow peel extracts was exhibited in three antioxidant assays, where 80% methanolic extracts showed the highest antioxidant activity (27.67±1.11mM/100 g for FRAP) and the highest scavenging activity, 72.83±0.65% and 64.80±0.91% for DPPH and superoxide anion radical assays, respectively. Strong correlations between total polyphenols and antioxidant activity were recorded. Eleven phenolic compounds-including five phenolic acids and six flavonoids-were identified and quantified by high performance liquid chromatography. Ferulic acid and hesperidin were the most abundant compounds whereas caffeic acid was the least abundant phenolic compound in kinnow peel extracts. Maximum inhibition zone was recorded against S. aureus (16.00±0.58 mm) whereas minimum inhibition zone was noted against S. typhimurium (9.00±1.16 mm). It was concluded that kinnow mandarin peels, being a potential source of phenolic compounds with antioxidant and antimicrobial properties,

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Design Of Nanotechnological Carriers For Ocular Delivery Of Mangiferin: Preformulation Study –A Review

Polepaka Ajay Kumar
Princeton College of Pharmacy

ABSTRACT

Mangiferin (MGN) is a natural compound, showing anti-inflammatory and antioxidant activities for the potential treatment of eye diseases. The poor physicochemical features of MGN (low solubility and high instability) justify its nanoencapsulation into nanostructured lipid carriers (NLC) to improve its ocular bioavailability.

Beneficial Aspects Of Custard Apple (*Annona Squamosa* L.) Seeds – Review

BoggulaRatnakumari
Princeton College of Pharmacy

ABSTRACT

This review gives information about the beneficial aspects of custard apple seeds. These seeds have been used as folk medicines worldwide. In traditional medicine, custard apple seeds were mainly used to treat various digestive disorders and as an insecticidal agent. The seed extract also showed some post-coital anti-fertility activity. An application of annonareticin, a lactone compound from custard apple seeds, in the treatment of lung cancer or breast cancer, indicated that the antitumor activity of annonareticin on lung cancer or breast cancer cells was higher than that of 5-fluorouracil. Another in vivo pharmacological experiment with custard apple seed extract, which contains several different types of annonaceousacetogenins, showed that annonaceousacetogenin V has obvious inhibitory effects on lung cancer, breast cancer, and liver cancer, with antitumor activity being 100 times higher than that of 5-fluorouracil. Annonaceousacetogenins are a large family of fatty acid-derived natural products with unique structures. They display a broad spectrum of biological activities, especially in the treatment of leukemia, liver cancer, prostate cancer, pancreatic cancer, and cervical cancer. The strongest antitumor activity among the acetogenins is that of bullatacin; its antileukemia activity is about 300 times higher than that of paclitaxel. The seed extract decreased hepatic lactoperoxidase (LPO), suggesting that it is safe and has an antiperoxidative nature. Quercetin also decreased hepatic LPO with a higher efficacy as compared with propyl thiouracil (PTU), a standard antithyroidic drug. However, the seeds of custard apple may cause blindness, reduction in movement, and some other adverse effects.

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Development And Validation Of Spectrophotometric Method For Clopidogrel Bisulfate In Bulk And Formulations

JyothisriSamanthakurthi
Princeton College of Pharmacy

ABSTRACT

Clopidogrelbisulfate belongs to the class of inhibitor of P2Y12 ADP platelet receptors inhibitor. The aim of this study was to develop simple, sensitive, cost effective, accurate, precise and rapid ultraviolet (UV) spectrophotometric method for the estimation of clopidogrelbisulfate in pure form and its formulations. For the estimation of clopidogrelbisulfate, solvent system employed was triple distilled water (pH 1) instead of acetonitrile and wavelength of detection was 222 nm. The developed method was used to estimate the total drug content in commercially available tablet formulations of clopidogrelbisulfate.

Hplc Method Development - A Review

Usha kondla

Princeton College of Pharmacy

ABSTRACT

They may be utilized as the basis for decisions relating to administering the drug to patients, play important roles in new discovery, development, manufacture of pharmaceutical drugs and various other studies related to humans and animals. Analytical method validation required during drug development and manufacturing and these analytical methods are fit for their intended purpose. To comply with the requirements of GMP pharmaceutical industries should have an overall validation policy which documents how validation will be performed. This article mainly focuses on the optimization of HPLC conditions. A sequence of events required for method development and analytical validation are described.

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Development And Validation Of A Stability-Indicating Column High-Performance Liquid Chromatographic Assay Method For Determination Of Nebivolol In Tablet Formulation

SarithaRasala
Princeton College of Pharmacy

ABSTRACT

A simple, precise, and accurate isocratic reversed-phase (RP) stability-indicating column high-performance liquid chromatographic (HPLC) assay method was developed and validated for determination of nebivolol in solid pharmaceutical dosage forms. Isocratic RP-HPLC separation was achieved on a Phenomenex Luna C8 (2) column (250 mm x 4.6 mm id, 5 microm particle size) using mobile phase composed of acetonitrile-pH 3.5 phosphate buffer (35 + 65, v/v) at a flow rate of 1.0 mL/min, and detection was performed at 280 nm using a photodiode array detector. The drug was subjected to oxidation, hydrolysis, photolysis, and heat to apply stress conditions. The method was validated for specificity, linearity, precision, accuracy, robustness, and solution stability. The method was linear in the drug concentration range of 40-160 microg/mL with a correlation coefficient of 0.9999. The repeatability relative standard deviation (RSD) for 6 samples was 0.69%, and the intermediate precision (RSD) for 6 samples was 1.39%. The accuracy (recovery) was between 98.57 and 99.55%. Degradation products produced as a result of stress studies did not interfere with detection of nebivolol, and the assay can thus be considered stability-indicating.

Antimicrobial Activity Of Flavonoids

SunithaChintala
Princeton College of Pharmacy

ABSTRACT

Flavonoids are ubiquitous in photosynthesising cells and are commonly found in fruit, vegetables, nuts, seeds, stems, flowers, tea, wine, propolis and honey. For centuries, preparations containing these compounds as the principal physiologically active constituents have been used to treat human diseases. Increasingly, this class of natural products is becoming the subject of anti-infective research, and many groups have isolated and identified the structures of flavonoids possessing antifungal, antiviral and antibacterial activity. Moreover, several groups have demonstrated synergy between active flavonoids as well as between flavonoids and existing chemotherapeutics. Reports of activity in the field of

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antibacterial flavonoid research are widely conflicting, probably owing to inter- and intra-assay variation in susceptibility testing. However, several high-quality investigations have examined the relationship between flavonoid structure and antibacterial activity and these are in close agreement. In addition, numerous research groups have sought to elucidate the antibacterial mechanisms of action of selected flavonoids. The activity of quercetin, for example, has been at least partially attributed to inhibition of DNA gyrase. It has also been proposed that sophoraflavone G and (-)-epigallocatechingallate inhibit cytoplasmic membrane function, and that licochalcones A and C inhibit energy metabolism. Other flavonoids whose mechanisms of action have been investigated include robinetin, myricetin, apigenin, rutin, galangin, 2,4,2'-trihydroxy-5'-methylchalcone and lonchocarpol A. These compounds represent novel leads, and future studies may allow the development of a pharmacologically acceptable antimicrobial agent or class of agents.

Coumarins: The Antimicrobial Agents – A Review

Viyyapu Ramesh Naidu
Princeton College of Pharmacy

ABSTRACT

Emergence of resistance by bacterial and fungal stains towards existing antimicrobial agents is one of the major problem as well as motivation to synthesize a new class of antimicrobial agents possessing potent activity compared to commonly used therapy. Coumarin is the heterocyclic compound formed from benzene and pyrone ring containing oxygen and its derivatives are of wide awareness because of their diverse biological activity and clinical applications, they are remarkably effective compounds both with respect to their inhibitory activity and their favourable selectivity ratio. Coumarins are regarded as a promising class of bioactive heterocyclic compounds that exhibit a range of biological activities like anti-microbial, anti-viral, anti-diabetic, anti-cancer activity, anti-oxidant, anti-parasitic, anti-helmintic, anti-proliferative, anti-convulsant, anti-inflammatory and anti-hypertensive activities etc.

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Recent Developments Of Quinolone-Based Derivatives And Their Activities Against Escherichia Coli

KokkulaSatyanarayana

Princeton College of Pharmacy

ABSTRACT

Escherichia coli (E. coli) is the most common pathogen in both hospital and community settings, and is capable of causing infections that can lead to serious consequences. Quinolones, one of the most common antibiotics in clinical use, are effective weapons to treat E. coli infections. However, the resistance of E. coli to quinolones develops rapidly and spreads widely. Thus, it has become increasingly urgent to enhance the potency of quinolones against both drug-susceptible and drug-resistant E. coli. This review aims to summarize the recent developments of quinolone derivatives with potential activity against E. coli, and to discuss the structure-activity relationship for further rationale design of this kind of derivatives.

Characteristics, Biological Properties And Analytical Methods Of Piperine: A Review

Sridhar Chilakani
Princeton College of Pharmacy

ABSTRACT

Piperine (PIP) is a natural alkaloid isolated from *Piper longum* L. that presents antioxidant, anticonvulsant, antimicrobial, neuroprotective, larvicidal, antiparasitic, anticancer effect and other pharmacological properties. However, the low aqueous solubility is the main barrier to its development from the laboratory to the clinic as a drug. Several strategies have been used to overcome this obstacle, like the incorporation of PIP into different drug delivery systems turned out to be highly efficient. In addition, several methods for the quantitative and qualitative analysis of PIP in various raw materials, including biological fluids (plasma, urine, metabolites, brain), plants and drug delivery systems, were investigated. Most recently high-performance liquid chromatography was used together with several detectors for this purpose. Therefore, this review presents a summary of characteristics chemical and biological properties of PIP as well as several techniques and analytical methods to optimize the

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analytical signal, increase sensitivity, selectivity and reduce the effects of interference for this drug.

Analytical Method Development And Validation Of Metformin, Losartan And Glimepiride In Bulk And Combined Tablet Dosage Form By Gradient Rp-Hplc

GaddamSwetha Reddy
Princeton College of Pharmacy

ABSTRACT

A simple, sensitive, linear, precise, and accurate method by gradient reversed-phase-high performance liquid chromatography for the simultaneous estimation of metformin (MET), losartan (LOS) and glimepiride (GLI) in bulk and in their combined tablet dosage form was developed and validated. The separation of the three drugs was based on the use of Luna c18 (250 ~ 4.6 mm, i.e. 5 m) column in a gradient mode. Mobile phase consisted of Methanol (solvent A) and 0.1% Orthophosphoric acid [OPA] (solvent B) was set with gradient programming for 18 min and was delivered at 1 ml/min flow rate and effluents are achieved with variable wavelength: Photodiode array detector at 284 nm. The retention times of MET, LOS and GLI were found to be 3.11, 7.12 and 13.52mins respectively. The percentage assay of MET, LOS and GLI was found to be 100.5%, 100.5 and 100.4%, respectively. Calibration curves were linear for MET, LOS and GLI at concentration ranges of 30- 450 ng/ml, and 15-225ng/ml and 1-18ng/ml with the regression coefficient of 0.999 for all the three drugs and precise with (% RSD <2). The drug was subjected to various stress conditions of acid and base hydrolysis, oxidation, photolysis, thermal degradation and condition. Considerable degradation was found under all stress conditions and the degradation products were well resolved from Metformin (MET),Losartan (LOS) and Glimepiride (GLI) in the proposed gradient RP-HPLC method.The method was validated by determining its linearity, accuracy, precision, system suitability and can be employed for routine quality control analysis.

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Isolation Of Antimicrobial Compounds From Guava (Psidium Guajava L.) And Their Structural Elucidation

KornaDevamani
Princeton College of Pharmacy

ABSTRACT

Four antibacterial compounds were isolated from leaves of guava (Psidiumguajava L.), and the structures of these compounds were established on the basis of chemical and spectroscopic evidence. Two new flavonoid glycosides, morin-3-O-alpha-L-lyxopyranoside and morin-3-O-alpha-L-arabopyranoside, and two known flavonoids, guaijavarin and quercetin, were identified. The minimum inhibition concentration of morin-3-O-alpha-L-lyxopyranoside and morin-3-O-alpha-L-arabopyranoside was 200 microg/ml for each against Salmonella enteritidis, and 250 microg/ml and 300 microg/ml against Bacillus cereus, respectively.

Review On Update Of The Health Effects Of Tomato Lycopene

HariprasadKadiyam
Princeton College of Pharmacy

ABSTRACT

Lycopene is a non-provitaminA carotenoid that is responsible for the red to pink colors seen in tomatoes, pink grapefruit, and other foods. Processed tomato products are the primary dietary lycopene source in the United States. Unlike many other natural compounds, lycopene is generally stable to processing when present in the plant tissue matrix. Recently, lycopene has also been studied in relation to its potential health effects. Although promising data from epidemiological, as well as cell culture and animal, studies suggest that lycopene and the consumption of lycopene containing foods may affect cancer or cardiovascular disease risk, more clinical trial data is needed to support this hypothesis. In addition, future studies are required to understand the mechanism(s) whereby lycopene or its metabolites are proven to possess biological activity in humans.

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Antimicrobial Activity Of Gallotannins Isolated From Mango (Mangiferaindical.) Kernels

A.Rajyalaxmi

Princeton College of Pharmacy

ABSTRACT

Gallotannins were extracted from mango (Mangiferaindica L.) kernels with aqueous acetone (80%, v/v) and purified using liquid-liquid extraction and two-step low-pressure liquid chromatography (LPLC) on Sephadex LH-20. Analytical high-performance liquid chromatography and mass spectrometry confirmed the presence of hydrolyzable tannins with a degree of galloylation ranging from 4 to 9 and additionally revealed the presence of deca-, undeca-, and dodeca-O-galloylglucose. Further purification using two-step semipreparative HPLC resulted in three pure hydrolyzable tannins, penta-, hexa-, and hepta-O-galloylglucose, with antibacterial activity, as evidenced from the agar spot and critical dilution assays. Although the growth of lactic acid bacteria was not inhibited, the proliferation of Gram-positive food spoilage bacteria was prevented and the growth of Gram-negative Escherichia coli was reduced. Because bacterial growth could be restored by the addition of iron to the medium, this study strongly supports the view that the inhibitory effects of hydrolyzable tannins are due to their iron-complexing properties.

Phytochemical Analysis And Antibacterial Studies Of Lawsonia Inermis Leaves Extract

G.Sateesh

Princeton College of Pharmacy

ABSTRACT

The leaves extracts of Lawsoniainermis, a member of the family Lythraceae, have been extracted by maceration technique in various solvents such as ethanol, ethyl acetate and n-hexane, evaluated for phytochemicals and their antibacterial potential against selected Gram negative (Proteus mirabilis and Pseudomonas aeruginosa) and Gram positive (Staphylococcus epidermidis and Enterococcus faecalis) bacterial isolates. The antibacterial activity was assessed through disc diffusion assay. It has been observed that the extracts of L. inermis leaves, have alkaloids, steroids, flavonoids and terpenoids, and saponins found in ethanol extract only. Glycosides were found in ethyl acetate and n-hexane extracts to a significant extent but glycosides were not recognized in ethanol extract. Maximum antibacterial efficacy was observed in ethanol extract and is most effective and ethyl acetate & n-hexane extracts

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show considerable antibacterial effect. This study shows that L. inermis leaves contain bioactive phytochemicals that may served as a biocompatible and eco-safe antiseptic or antibacterial agent in the drug formulations.

Review On Tomato Lycopene And Its Role In Human Health And Chronic Diseases

M.Pavani

Princeton College of Pharmacy

ABSTRACT

Lycopene is a carotenoid that is present in tomatoes, processed tomato products and other fruits. It is one of the most potent antioxidants among dietary carotenoids. Dietary intake of tomatoes and tomato products containing lycopene has been shown to be associated with a decreased risk of chronic diseases, such as cancer and cardiovascular disease. Serum and tissue lycopene levels have been found to be inversely related to the incidence of several types of cancer, including breast cancer and prostate cancer. Although the antioxidant properties of lycopene are thought to be primarily responsible for its beneficial effects, evidence is accumulating to suggest that other mechanisms may also be involved. In this article we outline the possible mechanisms of action of lycopene and review the current understanding of its role in human health and disease prevention.

Development And Validation Of A Rp-Hplc Method For The Simultaneous Analysis Of Paracetamol, Ibuprofen, Olanzapine, And Simvastatin During Microalgae Bioremediation - A Review

Sumalatha Reddi
Princeton College of Pharmacy

ABSTRACT

A rapid reverse phase high-performance liquid chromatography (RP-HPLC) method was developed and validated for the simultaneous quantification of paracetamol, ibuprofen, olanzapine, simvastatin and simvastatin acid in the context of microalgae bioremediation. The method was validated according to the guidelines of the US Food and Drug Administration (FDA), the International Conference on Harmonization (ICH), and Eurachem with respect to system suitability, linearity, accuracy, precision, recovery, limits of detection and quantification, ruggedness, selectivity and specificity. The estimated limits of detection and quantification were, respectively, 0.03 and 0.10 µg mL^{-1} for paracetamol, 0.03 and 0.09 µg mL^{-1} for ibuprofen, 0.04 and 0.13 µg mL^{-1} for olanzapine, 0.27 and 0.83 µg mL^{-1} for simvastantin, and 0.05 and 0.14 µg mL^{-1} for simvastantin acid. The inter-

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day and intra-day precision results were within the acceptance limit of relative standard deviation (%RSD) of less than 2, and the percentage recovery was found to be within the required limits of 80–110%. The developed method is rapid, linear, precise, robust and accurate, and has been successfully applied to the determination of the above common pharmaceutical products during microalgae bioremediation.

Assay Method Development And Validation Of Ibuprofen Tablets By Hplc

UpputuriSrikanth
Princeton College of Pharmacy

ABSTRACT

A new simple, accurate, precise and reproducible a reverse phase high performance (RP-HPLC) method has been developed of ibuprofen in tablet dosage forms using C18 column (Hypersil BDS, 150 x 4.6 mm, 5 µm) in isocra tic mode. The mobile phase contains a combination of Acetate buffer (triethylamine& or tho phosphoric acid) and acetonitrile in the ratio of 40:60% (v/v). The flow rate was 1.5 ml/min and detection wavelength was carried out at 220 nm. The retention times of ibuprofen was 3.2 min, respectively. The validation of method was carried out utilizing ICH guidelines. The described HPLC method was successfully employed for the analysis of pharmaceutical formulations containing Tablet dosage form.

A Rapid And Sensitive Reversed Phase-Hplc Method For Simultaneous Determination Of Ibuprofen And Paracetamol In Drug Samples And Their Behaviors In Simulated Gastric Conditions.

Viyyapu Ramesh Naidu
Princeton College of Pharmacy

ABSTRACT

Paracetamol is a widely used drug for fever and pain relief. Ibuprofen is a common nonsteroidal anti-inflammatory drug. In this study, a sensitive and accurate reversed phase high performance liquid chromatography method was developed for the simultaneous determination of ibuprofen and paracetamol. The chromatographic separation was achieved on a Phenomenex C18 (250 mm, 4.6 mm, 5 µm) column. Fifty milli molar phosphate buffer (pH 7.5) and methanol were used as mobile phase in a gradient elution mode. The retention times of paracetamol and ibuprofen were 5.7 and 10.4 min, respectively. The linearity of the developed method was established in the range of 0.25 – 250 mg/L with a correlation coefficient of 0.9998 for both analytes. The limit of detection/quantification values

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were found to be 0.06/0.19 and 0.08/0.26 mg/L for ibuprofen and paracetamol, respectively. The method was successfully applied in drug samples in the form of tablets and suspensions. The calculated concentrations matched with the claimed values on their prospectuses. The drug samples were studied under simulated gastric conditions to determine the behaviors of the analytes in the human body.

Development And Validation Of A Rp-Hplc Method To Quantify Omeprazole In Delayed Release Tablets

SanguJyothi
Princeton College of Pharmacy

ABSTRACT

An analytical method using a sensitive high performance liquid chromatographic technique was developed to quantify omeprazole in delayed release tablets. The analysis was carried out using a RP-C_{18} column with UV-Vis detection at 280 nm. The mobile phase was diluted with phosphate buffer (pH 7.4) and acetonitrile (70:30 v/v) at a flow-rate of 1.5 mL·min^{-1}. The parameters used in the validation process were: linearity, range, quantification limit, accuracy, specificity, and precision. The retention time of omeprazole was about 5 min with symmetrical peaks. The linearity in the range of 10.0–30.0 µg/mL presented a correlation coefficient of 0.9995. The excipients in the formulation did not interfere with the analysis and the recovery was quantitative.

Rp-Hplc Method Development And Validation Studies For The Estimation Of Aspirin, Clopidogrel Bisulphate And Rosuvastatin Calcium In Fixed Dose Combination Capsules

JyothisriSamanthakurthi
Princeton College of Pharmacy

ABSTRACT

The present project was conducted with the objective of developing and validating a RP-HPLC method for the simultaneous estimation of aspirin, clopidogrel bisulphate, and rosuvastatin calcium in fixed-dose combination capsule. The chromatographic separation was carried out on Agilent 1260 series using Waters C18 (250 × 4.6 mm, 5 µ) column as the stationary phase and acetonitrile (ACN): phosphate buffer pH 3, gradient mode at a flow rate of 1.2 ml/min and detection at 230 nm. The validation of the developed method was conducted as per the ICH guidelines Q2 (R1). The retention time of aspirin, rosuvastatin calcium and clopidogrel bisulphate was found to be 3.2 min, 4.7 min, and 12.8 min, respectively, under the optimized chromatographic conditions. The developed method was linear in the concentration range of 6.25-400 µg/ml for aspirin, rosuvastatin calcium, and

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clopidogrel bisulphate. The developed method was specific, with a mean percent recovery of the three drugs in the range of 99-101%. The relative standard deviation (RSD) was less than 2 in the intraday and inter-day precision studies. A simple, accurate, robust, and precise RP-HPLC method was developed for the simultaneous estimation of aspirin, rosuvastatin calcium, and clopidogrel bisulphate in fixed-dose combination capsule. The developed method was validated for linearity, range, accuracy, precision, robustness, LOD, LOQ, and system suitability. This method can be conveniently used for quantification of the three drugs in fixed-dose combination products.

Review On Anti-Infective Drug Development For Mrsa

Thejovathi.B

Princeton College of Pharmacy

ABSTRACT Staphylococcus aureus is an important pathogen linked to serious infections both in the hospital and the community settings. The challenge to treat infections caused by S. aureus has increased because of the emergence of multidrug-resistant strains such as methicillin-resistant S. aureus (MRSA). A limited spectrum of antibiotics is available to treat MRSA infections. This chapter reviews antimicrobial agents currently in use for the treatment of MRSA infections as well as agents that are in various stages of development. This chapter also reviews the alternate approaches that are being explored for the treatment of staphylococcal infections.

Antibacterial Activity And Mechanism Of Action Of A Novel Anilinouracil-Fluoroquinolone Hybrid Compound A Review

RoopaniMadhu
Princeton College of Pharmacy

ABSTRACT

The anilinouracils (AUs) such as 6-(3-ethyl-4-methylanilino)uracil (EMAU) are a novel class of gram-positive, selective, bactericidal antibacterials which inhibit pol IIIC, the gram-positive-specific replicative DNA polymerase. We have linked various fluoroquinolones (FQs) to the N-3 position of EMAU to generate a variety of AU-FQ "hybrids" offering the potential for targeting two distinct steps in DNA replication. In this study, the properties of a hybrid, "251D," were compared with those of representative AUs and FQs in a variety of in

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vitro assays, including pol IIIC and topoisomerase/gyrase enzyme assays, antibacterial, bactericidal, and mammalian cytotoxicity assays. Compound 251D potently inhibited pol IIIC and topoisomerase/gyrase, displayed gram-positive antibacterial potency at least 15 times that of the corresponding AU compound, and as expected, acted selectively on bacterial DNA synthesis. Compound 251D was active against a broad panel of antibiotic-resistant gram-positive pathogens as well as several gram-negative organisms and was also active against both AU- and FQ-resistant gram-positive organisms, demonstrating its capacity for attacking both of its potential targets in the bacterium. 251D also was bactericidal for gram-positive organisms and lacked toxicity in vitro. Although we obtained strains of Staphylococcus aureus resistant to the individual parent compounds, spontaneous resistance to 251D was not observed. We obtained 251D resistance in multiple-passage experiments, but resistance developed at a pace comparable to those for the parent compounds. This classof AU-FQ hybrids provides a promising new pharmacophore.

Cosmeceuticals A Review

Thejovathi.B

Princeton College of Pharmacy

ABSTRACT

Cosmeceuticals have undoubtedly taken over the personal care industry across the globe. Despite the prevalent confusion about its definition and scope, it would not be an exaggeration to state that almost 30% to 40% of any dermatologist's prescription count across the world consists of a cosmeceutical. The term was coined in 1984 by Dr. Albert Kligman of the University of Pennsylvania describing a hybrid category of products mid-way on the spectrum of 'cosme'tics and pharma'ceutical.' A cosmeceutical is consensually accepted to exert a 'pharmaceutical therapeutic benefit' but not necessarily a 'biological therapeutic benefit.' For Dr. Kligman, cosmeceutical represented “a topical preparation that is sold as a cosmetic but has performance characteristics that suggest pharmaceutical action.” He coined this term around the crucial time of Kligman's experimentation on the anti-aging effects of tretinoin.

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Monolithic Columns In High-Performance Liquid Chromatography

Miss Hema
Princeton College of Pharmacy

ABSTRACT

Monolithic media have been used for various niche applications in gas or liquid chromatography for a long time. Only recently did they acquire a major importance in high-performance column liquid chromatography (HPLC). The advent of monolithic silica standard- and narrow-bore columns and of several families of polymer-based monolithic columns has considerably changed the HPLC field, particularly in the area of narrow-bore columns. The origin of the concept, the differences between their characteristics and those of traditional packed columns, their advantages and drawbacks, the methods of preparation of monoliths of different forms, and the current status of the field are reviewed. The actual and potential performance of monolithic columns are compared with those of packed columns. Monolithic columns have considerable advantages, which makes them most useful in many applications of liquid chromatography. They are extremely permeable and offer a high efficiency that decreases slowly with increasing flow velocity.

Development And Validation Of Rp-Hplc Method For Simultaneous Estimation Of Atorvastatin Calcium And Fenofibrate In Tablet Dosage Forms

Thejovathi.B

Princeton College of Pharmacy

ABSTRACT

A reverse phase high performance liquid chromatographic method was developed for the simultaneous estimation of atorvastatin calcium and fenofibrate in tablet formulation. The separation was achieved by Luna C18 column and methanol:acetate buffer pH 3.7 (82:18 v/v) as mobile phase, at a flow rate of 1.5 ml/min. Detection was carried out at 248 nm. Retention time of atorvastatin calcium and fenofibrate was found to be 3.02+0.1 and 9.05+0.2 min, respectively. The method has been validated for linearity, accuracy and precision. Linearity for atorvastatin calcium and Fenofibrate were in the range of 1-5 µg/ml and 16-80 µg/ml, respectively. The mean recoveries obtained for

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Atorvastatin calcium and fenofibrate were 101.76% and 100.06%, respectively. Developed method was found to be accurate, precise, selective and rapid for simultaneous estimation of atorvastatin calcium and fenofibrate in tablets.

Formulation And Evaluation Of Cetirizine Dihydrochloride Orodispersible Tablets

AnumulaNarender Reddy
Princeton College of Pharmacy

ABSTRACT

Cetirizine orodispersible tablets were prepared to achieve quick onset of action and for maximum bioavailability. Tablets were prepared using cetirizine along with camphor and mannitol in the proportion of 1:1:1, 1:1:3, and 1:1:6. The flow property of granules was found to be good for the formulation CZ2 (1:1:3). The hardness and friability of all the formulations were found to be within the standard limit for orodispersible tablets. Disintegration time was found to be rapid in formulation CZ2 (1:1:3).The in vitro dissolution time was found to be 100% in 11 minutes for the formulation CZ2 (1:1:3).

Rp-Hplc Method For Simultaneous Estimation Of Bisoprolol Fumarate And Hydrochlorothiazide In Tablet Formulation

BathulaVenkatesham
Princeton College of Pharmacy

ABSTRACT

A simple, precise and stability-indicating HPLC method was developed and validated for the simultaneous determination of bisoprololfumarate and hydrochlorothiazide in pharmaceutical dosage form. The method involves the use of easily available inexpensive laboratory reagents. The separation was achieved on an Inertsil ODS 3V (25cmx4.6mm) 5microm column with isocratic flow. The mobile phase at a flow rate of 1.0mLmin(-1), consisted of 0.1M potassium dihydrogen phosphate buffer and acetonitrile (70:30, v/v). The UV detection was carried out at 228nm. A linear response was observed over the concentration range 2.5-50microgmL(-1) of bisoprololfumarate and the concentration range 6.25-125microgmL(-1) of hydrochlorothiazide. Limit of detection and limit of quantitation for bisoprololfumarate were 0.01 and 0.03microgmL(-1), respectively and for hydrochlorothiazide were 0.01 and 0.05microgmL(-1), respectively. The method was successfully validated in accordance to ICH guidelines acceptance criteria for specificity, linearity, accuracy, precision, robustness,

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ruggedness and system suitability. Individual drugs (bisoprololfumarate and hydrochlorothiazide), their combinations and the tablets were exposed to thermal, photolytic, hydrolytic and oxidative stress conditions. The resultant stressed samples were analyzed by the proposed method. The method gave high resolution among the degradation products and the analytes. The peak purity of analyte peaks in the stressed samples was confirmed by photodiode array detector. The method was used for accelerated stability study on marketed and in-house formulations. The analysis concluded that the method was selective for simultaneous estimation of bisoprololfumarate and hydrochlorothiazide and was stability-indicating.

Coumarin Derivatives With Antimicrobial And Antioxidant Activities

A.Mallikarjun

Princeton College of Pharmacy

ABSTRACT

Coumarin derivatives are structurally interesting compounds for synthesizing antimicrobial and antioxidant agents. Starting from 4-methyl-7-hydroxycoumarin, several derivatives with these properties have been obtained through different reaction steps. Their molecular structures were established by Fourier-transform infrared spectroscopy and nuclear magnetic resonance spectroscopy. The synthesized coumarin derivatives exerted meaningful activities against Gram-positive and Gram-negative bacteria as well as strains of Candida spp. All compounds also exhibited high and moderate antioxidant activity in assays for DPPH inhibition, total reducing power, and nitric oxide (NO) inhibition when compared to ascorbic acid.

A Review On Antimicrobial Potential Of Sulfonamide Scaffold

K.Bhavani

Princeton College of Pharmacy

ABSTRACT

Sulfonamides, sometimes called sulfa drugs, are the first drug that is largely employed and systematically essential for preventive and chemotherapeutic agents against various bacteria. Sulfonamides possess a wide range of pharmacological activities such as Oral hypoglycemic, antileprotic, anti-epileptic, anti-hypertensive, anti-bacterial, anti-protozoal, anti-fungal, antiretroviral, non-peptidic vasopressin receptor antagonists, anti-cancer, anti-inflammatory, translation initiation inhibitors, and used as a diuretic. The rapid evolution of drug-resistant bacterial and fungal infections has demanded a universal effort to search for new generation sulfonamide derivatives. The

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sulphonamides or sulfa drugs competitively inhibit folic acid synthesis in microorganisms and subsequently inhibit the multiplication of bacteria but do not actively kill them. These sulfonamides have a variety of synthetic reactions to work with. On the basis of the literature survey, the present review highlights research work in the recent decade, including potential antimicrobial activities of sulfonamides compounds. This review covers current advances related to synthesis and pharmacological effects of sulfonamides, especially in apprehension to anti-microbial agents.

Development And Validation Of HPLC Method For Determination Of Indomethacin And Its Two Degradation Products In Topical Gel

Dr.P.Raja Sridhar Rao

Princeton College of Pharmacy

ABSTRACT

Indomethacin forms by decomposition two degradation products: 4-chlorobenzoic acid and 5-methoxy-2-methylindoleacetic acid. They have to be monitored together with an active substance both during manufacturing process and storage of pharmaceuticals. European Pharmacopoeia (Ph. Eur. 4) describes titration method for determination of indomethacin, which is not very convenient in this case for practical use. Therefore, high performance liquid chromatography is the method-of-choice enabling determination of active substance and its degradation products during one-step procedure simultaneously and automatically. We have developed a fast, simple and fully automated analytical method for determination of indomethacin and its two impurities in pharmaceutical preparation using HPLC with UV detection. Various stationary phases were tested, especially new types of Zorbax columns made by Agilent. While the conventional C18 stationary phases were not convenient enough to achieve quick and reliable separation, Zorbax-Phenyl analytical column (75 mm x 4.6 mm, 3.5 microm) enables separation of indomethacin and its two degradation products during 7.5 min. Chromatography was performed using isocratic elution with binary mobile phase composed of acetonitrile and 0.2% phosphoric acid (50:50, v/v) at flow rate 0.6 ml/min. Even faster separation of standards was obtained with analytical column Zorbax SB-CN (150 mm x 4.6 mm, 5 microm). The analytical run was shortened to 5 min. Both methods use detection wavelength 237 nm and both can use either ketoprofen or flurbiprofen as internal standard for quantitation. The first method was finally chosen for validation because of the occurrence of placebo interferences in the case of using Zorbax SB-CN. System suitability parameters and validation parameters including method precision, accuracy, linearity, selectivity and robustness were set up. Afterwards, the method was successfully applied for the practical determination of indomethacin and its degradation products in a topical gel and for compound degradation control during stability studies.

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Topical Delivery of Meloxicam Using Liposome and Microemulsion Formulation Approaches

Ponugoti Raja Sridhar Rao
Princeton College of Pharmacy

ABSTRACT

The aim of this study is to develop, characterize and compare conventional liposome, deformable liposome (transfersome) and microemulsion formulations as potential topical delivery systems for meloxicam. Liposomes were characterized in terms of vesicle size, zeta potential and entrapment efficiency. For microemulsions, particle size, electrical conductivity and viscosity studies were performed to assess the structure of the investigated systems. An ex vivo skin permeation study has been conducted to compare these formulations. The dermal and transdermal delivery of meloxicam using these formulations can be a promising alternative to conventional oral delivery of non-steroidal anti-inflammatory drugs (NSAIDs) with enhanced local and systemic onset of action and reduced side effects.

Quinolone Derivatives And Their Activities Against Methicillin-Resistant Staphylococcus Aureus (Mrsa)

Sridhar Chilakani
Princeton College of Pharmacy

ABSTRACT

Methicillin-resistant Staphylococcus aureus (MRSA) is the most common pathogen both in hospital and community settings, and is capable of causing serious and even fatal infections. Several antibiotics have been approved for the treatment of infections caused by MRSA, but MRSA has already developed resistance to them. More than ever, it's imperative to develop novel, high effective and fast acting anti-MRSA agents. Quinolones are one of the most common antibiotics in clinical practice used to treat various bacterial infections, and some of them displayed excellent in vitro and in vivo anti-MRSA activities, so quinolone derivatives are one of the most promising candidates. This review summarizes the recent developments of quinolone derivatives with potential activity against MRSA, and the structure-activity relationship is also discussed.

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