ABSTRACT

National Seminar on Drug Design and Optimisation of Drug Delivery Systems

November 9, 2017
NIRMALA COLLEGE OF PHARMACY
Muvattupuzha, Kerala
NIRMALA COLLEGE OF PHARMACY
MUVAATTUPUZHA, KERALA

Co-sponsored by
Kerala State Council for Science Technology & Environment
Govt. of Kerala

NILA - MODULE V
NIRMALA IGNITES LEARNING ASPIRATION 2017

National Seminar on
“Drug Design and Optimisation of Drug Delivery Systems

9th NOVEMBER 2017
Cordially invite you to

NILA 2017
National Seminar on
DRUG DESIGN AND
OPTIMISATION OF
DRUG DELIVERY SYSTEMS
9th November 2017

Organised By:
Department of Pharmaceutics
Nirmala College of Pharmacy,
Muvattupuzha, Ernakulam Dist., Kerala

Poster Presentation on various disciplines related to Pharmaceutical Sciences

SCIENTIFIC SESSION

8.30-9.30 am : Registration
9.30-10.00 am : Inauguration
10-11.30 am : Plenary Lecture 01
Topic : Structure based drug design:
An overview and case studies
Speaker : Dr. S. Jubie, Assistant Professor,
Department of Pharmaceutical
Chemistry, JSS College of Pharmacy,
Ooty.

11.30-11.45 am: Tea Break
11.45 am -1.15 pm : Plenary Lecture 02
Topic : Design of experiment:
A software approach for the optimization of drug delivery system
Speaker : Dr. N. Jawahar, Assistant Professor,
Department of Pharmaceutics, JSS
College of Pharmacy, Ooty.

1.15-2.30 pm : Lunch Break
2.30-3.30 pm : Poster Presentation
03.30-3.45 pm : Valedictory Function

Topic of the Seminar is related to the new M.Pharm syllabus as prescribed by Pharmacy Council of India
Abstracts accepted for

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National Seminar on Drug Design and Optimisation of Drug Delivery Systems

November 9, 2017

NIRMALA COLLEGE OF PHARMACY

Muvattupuzha, Kerala
Microbial biofilms are communities of microorganisms encased within a gelatinous matrix of extracellular polysaccharides which is purported to be a threatened source of chronic infections in man. It is only in the beginning of 20th century that man came to study extensively on these casings which are found adhered to both biotic and abiotic surfaces as a dreadful barrier which we need to fight against. Besides, the molecular level resistance, these microbial communities do exert community level resistance which we cannot struggle by mere antibiotics alone and new methodologies have been essentially required to combat this biofilm. Hence my poster mainly focus on what is biofilm and the various antibiofilm strategies that inhibit the biofilm formation by altering the physicochemical properties of the surfaces on which it initiates, inhibiting the quorum signaling of microorganisms and to eradicate the preformed biofilms by inducing it’s dispersal, persisters eradication, and employing various drug delivery systems.
Abstract

The main aim of the tablet is formulate and evaluate orodispersible tablets containing pantoprazole tablets by sublimation method. Totally four different formulations were developed using various concentration of sublimation agent and superdisintegrants. The developed formulations were analyzed for FTIR, hardness, friability, weight variation test wetting time, and dissolution study. The results of the indicate F4 formulation was found to be best among the other formulations.
FORMULATION AND EVALUATION OF MICONAZOLE NIOSOMAL GEL

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Abstract

Fungal infections of the skin are one of the often faced dermatological diseases in worldwide. Topical therapy is an attractive choice for the treatment of the cutaneous infections due to its advantages such as targeting of drug to the site of infection and reduction of the risk of systemic side effects. A study was conducted to investigate the feasibility of using niosome as a transdermal drug delivery system for Miconazole. Topically applied niosomes can increase residence time of the drug in the stratum corneum and epidermis, reducing the systemic absorption. Miconazole is an imidazole antifungal agent used in the treatment of candida and other fungal infections. This project aimed at formulating Miconazole niosomes by two different methods (thin film hydration and modified ether injection method) and to evaluate optimized niosomes in carbopol gel. Miconazole niosomes were prepared by varying the concentration of cholesterol and surfactant ratios and optimized by two level factorial designs using stat ease design expert version10 software. Eight runs were done with two methods from which most appropriate formulation was selected considering the range of vesicle size (0.3µm) and maximum entrapment efficiency (87.9%). With the optimized formulation niosomal gel were prepared using carbopol 940 as gelling agent. Evaluation studies were done for carbopol gel such as viscosity, extrudability, spreadability, release study, antifungal activity and skin irritation. Thin film niosomal gel showed 93.6% release after 7hrs. This thin film niosomes were selected for further kinetic studies and stability studies. Hence thin film hydration method was found better when compared with modified ether injection method for Miconazole niosomal gel application.

Key words: Niosomes, Miconazole, Cutaneous infection, Transdermal drug delivery.
Abstract

The main aim is to formulate and evaluate Transdermal drug delivery Patches of Ketoprofen by solvent evaporation method. Totally three different formulations were developed using various ratios of polymers. The developed formulations were analyzed for FTIR, drug content, moisture content, folding endurance, thickness and dissolution study. The results of this indicate that F4 formulation was found to be best among the other formulations.
QUERCETIN NANOSUSPENSION: IN VITRO ANTI-TUMOR ACTIVITY AGAINST DALTON LYMPHOMA CELL LINE

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Abstract

In this present work quercetin nanosuspension (QNS) has been formulated and investigated its anti-tumor activity against Dalton’s lymphoma cells (DLA) in an in vitro model. Since quercetin is insoluble in water, it has been formulated into nanosuspension in order to improve the solubility as well as dissolution rate of the drug. Quercetin nanosuspension (QNS) was formulated using high pressure homogenization method followed by lyophilization process. The QNS was subjected to particle size, zeta-potential, solubility study, in-vitro dissolution study and stability study. Further QNS was subjected to anti-oxidant study by DPPH method and anti-tumor study using Dalton’s lymphoma cells. The results showed that Particle size of the QNS was found to be within the range of ~160-200nm. The zeta potential values of QNS were obtained as (3.69mV). Solubility of QNS was found to be 15.41±0.6µg/ml. QNS could increase the dissolution rate as well as the saturation solubility. QNS showed antioxidant activity compared with that of standard ascorbic acid. QNS exhibited dose-dependent anti-tumor activity with DLA cells. This study concluded that formulated QNS exhibited potent antioxidant activity as well as anti-tumor activity.

Keywords: Nanosuspension; MTT assay; cancer cells.
FORMULATION AND EVALUATION OF SIMVASTATIN BUCCAL ADHESIVE TABLETS

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Abstract

The study was aim to formulate and evaluate Simvastatin buccal adhesive tablets for avoiding the first pass metabolism and improve its bioavailability with reduction in dosing frequency. It has been proposed for Increase bioavailability, and Avoid first pass metabolism, there by Improve efficacy. To study the influence of different polymers on swelling index, Mucoadhesive strength & Drug release Preformualtion studies and evaluation test of the formulation has been carried out. Incase of preformulation studies themelting point was 136°C and there was no change in physical description. The FTIR spectra analysis do not show any kind of physical incompatibility between the drug and polymer. The release rate decreased with increasing concentration of xanthan gum. Formulation F3 showed relatively high rate of release of drug which is due to rapid swelling and erosion of Guar gum. From the in vitro dissolution data F3 and F7 choosed for mucoadhesive strength determination. The formulation F3 (guar gum, chitosan, aloe) was taken as optimized formula based on its in vitro release and mucoadhesive strength. It can be concluded that Simvastatin buccal adhesive tablets were successfully formulated using natural polymers, The prepared tablets gave promising results with respect to mucoadhesion strength and in vitro release from the dosage form. Mathematical modeling of drug release studies showed that it followed zero order kinetics, Mechanism of the release was found to be non fickian diffusion. All the evaluation parameters of the optimized formulations were within the limit for the buccal adhesive tablets. The future plans include Bioavailability Study, In vitro- in vivo correlation.
Formulation and Evaluation of Fast Disintegrating Sublingual Tablets of Losartan Potassium Using Various Superdisintegrants

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Abstract

The fast disintegrating sublingual tablets is defined as a solid dosage form that contains medicinal substances and disintegrates rapidly (within few seconds) without water when kept under the tongue. The objective of the present study was to formulate fast disintegrating sublingual tablets of Losartan potassium using various superdisintegrants for emergency treatment of hypertension. The fast disintegrating sublingual tablets may lead to significant improvements over current treatment options for specific patient groups, for instance, pediatric, geriatric, psychiatric, bedridden patients having difficulty in swallowing conventional tablets. Sublingual route usually produces a faster onset of action, increased bioavailability than orally ingested tablets, bypassing the hepatic first-pass metabolism and drug absorbed through the sublingual blood vessel reaches systemic circulation directly. The faster disintegration in the mouth in absence of additional water help the busy people who don’t always access of water. Reduces problem of dosing accuracy in case of oral suspensions. The tablets were subjected to disintegration, dissolution, accelerated stability studies. FTIR studies showed there was no incompatibility between drug and different polymers. Losartan is an angiotensin-II receptor antagonist used in treatment of hypertension. The disintegration studies proves that F9 formulation have least disintegration time (20 sec). The dissolution studies indicate that the drug release of all the formulations were found to be above 60% in five minutes except for formulations (F4 and F5). The release rate of the three superdisintegrants were in the order of Crospovidone > Sodium Starch Glycolate > Croscarmallose. The optimised formulation was subjected to stability studies for 3 months at 40±2°C with 75±5%RH and showed there is no significant change in product performance upon stability and thus product is stable. Losartan potassium can be successfully formulated as fast disintegrating sublingual tablets using various superdisintegrants (Sodiumstarchglycolate, croscarmellosesodium, crospovidon) in different concentrations.

Nirmala College of Pharmacy, Muvattupuzha.
NILA 2017 – Module – V
National Seminar on Drug Design and Optimisation of Drug Delivery Systems
FORMULATION AND EVALUATION OF ANTI MIGRAINE ORAL DISINTEGRATION TABLET

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Abstract

Migraine is a primary headache disorder characterized by recurrent headaches that are moderate to severe. Typically, the headaches affect one half of the head, are pulsating in nature, and last from 2 to 72 hours.

The present study was to formulate develop and evaluate, palatable orally disintegrating tablets of an anti-migraine drug. Strength is 2.5mg. It has been proposed for taste masking and patient compliance. The oral disintegrating tablets are small to moderate molecular weight, good stability in water and saliva. This work is carried out under the preformulation studies of the antimigraine drug. In that physicochemical characterization of antimigraine drug is done. The study was performed using different excipients of choice in the formulation to determine the compatibility of the excipient with drug at accelerated conditions. In this study tablet is manufacture by direct compression method. The prepared formulation were evaluated by pre compression and post compression method. From the above study oral disintegrating tablet of Anti-migraine drug was prepared by using Pharmaburst. The finalized formula (F1 Formulation) showed good results in DT (18 seconds) and drug release (97%) also. The stability studies were performed on F1 batch as per ICH guidelines, which showed absence of any significant changes in drug content, drug release and disintegration time. The evaluation parameters of Pharmaburst formulation was within the acceptable limit, so it is considered as best formulation.
FORMULATION AND IN-VITRO EVALUATION OF ORODISPERSE TABLETS OF ACECLOFENAC

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Abstract

Orodispersible tablets is a solid dosage form containing drug(s) which disintegrates rapidly, usually within a matter of seconds, when placed upon the tongue. Disintegrate into smaller particles and produces homogeneous suspension or solution. The primary patients for ODTs are pediatric, geriatric, and bedridden or disabled patients.

The aim of the study was to formulate a gellified emulsion of coal tar and salicylic acid and to evaluate the prepared product for various physico-chemical characteristics and to compare with that of marketed ointment.

Orodispersible tablets of Aceclofenac was prepared using 2 different super disintegrants in different ratios and evaluations were performed. The evaluation parameters of all the parameters were within the acceptable limits. It was found from the study that the disintegration time of the tablet decreases with increasing polymer concentration.

On comparing the two different polymers, the results showed that formulation containing croscarmellose sodium has minimal disintegration time of 31.95 sec. The disintegrant property of the polymers decreases in the order Croscarmellose sodium (31.95) > Sodium starch glycolate (40.85). Croscarmellose sodium has better drug release (94.38%) within 30 minutes compared to Sodium starch glycolate (88.44%). Future scope also includes In Vivo evaluations.
FORMULATION AND EVALUATION OF HERBAL EMULGEL OF *Basella Alba* LINN FOR WOUND HEALING ACTIVITY

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Abstract

The aim of the study was to formulate and evaluate *Basella alba Linn* leaf extract into a emulgel for burn wound healing activity. Plants and their extracts have immense potential for the management and treatment of wounds. The phyto-medicines for wound healing are not only cheap and affordable but are also purportedly safe as hyper sensitive reactions are rarely encountered with the use of these agents.

The leaves were successfully extracted with ethanol and water. Qualitative phytochemical screening revealed presence of carbohydrates, steroids and amino acids in chloroform extract, alkaloids, saponins, carbohydrates, flavonoids, amino acid, proteins in aqueous extract and alkaloids, protein, flavonoid in the alcoholic extract. Preliminary pharmacological study showed the aqueous extract of *Basella alba Linn* leaf possess maximum wound healing effect in rats and the effects produced was maximum with 4% aqueous extract and this concentration was used for the formulation. The formulations were found to be neutral (pH 6.6 to 7.0) and drug content was found to be in the range of 89 -99.83%w/w. The formulations were found to be stable for 3 months. Pharmacological evaluation of gels revealed that all formulations are non- sensitizing and safe for use. Therefore, *Basella alba* aqueous extract when formulated as emulgel shows significant improvement in burn wound contraction and hence this is a promising candidate in burn wound healing.

Phytoconstituents responsible for wound healing activity (Quercetin) has to be isolated by column chromatography. Structural elucidation of the responsible active constituent has to be done. Clinical trials have to be carried out after the scale up studies of optimized formulation.
FORMULATION AND EVALUATION OF IN SITU OPHTHALMIC GEL OF MOXIFLOXACIN HYDROCHLORIDE FOR SUSTAINED OCULAR DELIVERY

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Abstract

Conventional ophthalmic dosage forms such as eye drops, eye ointments, eye lotions having poor bioavailability and therapeutic response. Poor bioavailability of conventional dosage forms due to Binding by the lacrimal proteins, drainage of the instilled solutions, lacrimation and tear turn over, limited corneal, nasolacrimal drainage, and tear evaporation and poor permeability. A novel approach to overcome these problems leads to development of in situ gel forming ophthalmic delivery system. The study was to develop an in situ ophthalmic gel of an anti infective drug Moxifloxacin hydrochloride for sustained ocular delivery for treatment of bacterial infections of the eye.

It has been developed to provide a formulation with better residence time, enhanced bioavailability after topical administration, reducing the dose and dose frequency, improved patient compliance. In situ ophthalmic gel of Moxifloxacin hydrochloride was successfully prepared and evaluated. The product was found to be, Clear and transparent, pH within the range, drug content 92 to 98%, Shows pseudo plastic behavior, Sustained release over 6 hours, Sterile, non irritant, better antimicrobial activity and Stable. From the study the main achievements are were Increased residence time, Improved bioavailability, Reduced dose and dose frequency and Improved patient compliance.
AN ATTEMPT TO DEVELOP AND EVALUATE A NUTRACEUTICAL PRODUCT WITH RICE BRAN

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Abstract

The present study was to formulate and evaluate a nutraceutical product with rice bran. Rice bran was successfully extracted with hexane and water. The phytochemicals present in the extract were identified by qualitative phytochemical screening, which reveals the presence of fixed oils, proteins, carbohydrates and fats in hexane extract. The water extract also contains proteins, minerals and carbohydrates etc. The hexane extract of rice bran was taken for the nutritional facts determination and the results showed its potential for converting it to a nutraceutical product.

The extract was formulated into 6 different micro emulsion formulations by changing the concentration of gum acacia. The DLS showed that the particle size average was found to be 843.3 nm (0.843µm) for the Nutraceutical formulation F5, 70% of total no of particles are in range between 80-200nm which was found to be in the range for micro emulsions (10-100nm). Polydispersity index for the formulation F5 is found to be 0.408 which is in the acceptable range. The nutritional facts for the formulation F5 showed that, it is having a good amount of proteins, minerals, carbohydrates and vitamins. Stability studies revealed that there was no significant difference in the physical parameters. Thus the formulation F5 was found to be stable for three months. It was finally concluded that the formulations F5 was found to be more promising formulation as it shows better physicochemical characteristics and more stable compared to other formulations. The Individual nutraceutical elements have to be separated and made into individual products for various disease conditions. The clinical trial has to be carried out after the scale up studies of the optimized formulation. And hence the formulation has been found to be promising for future studies.
FORMULATION AND EVALUATION OF HERBAL NANOGEL OF Ruta Graveolens FOR ANTI-INFLAMMATORY ACTIVITY

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Abstract

The aim of the study was to formulate and evaluate Ruta graveolens Linn extract into a nanogel for anti-inflammatory activity. The aerial parts were successfully extracted with ethanol and water. The phytochemicals present in the extract were identified by qualitative phytochemical screening. The alcoholic extract contains Alkaloids, carbohydrates and flavonoids and aqueous extract also contains alkaloids, carbohydrates, tannins, flavanoids, saponins and phenols. Maximum percentage yield of extract was shown by ethanolic extract (11.5% w/w). In TLC, the aqueous extract of Ruta graveolens showed four peaks in the mobile phase Dichloromethane: Ethyl alcohol (90:10). The first peaks with Rf value of 0.81 which are almost coinciding with standard skimmianine Rf values (0.83). The UV maxima are found to be 330.1nm by UV spectroscopy. The herbal extract is used in nanogel formulations by changing the concentration of Carbopol 940 and HPMC K4M. Span 80 is used as surfactant for the preparation of nanoparticle.

The prepared nanoparticle is incorporated into gel base containing cinnamon oil as penetration enhancer and paraben as preservative. All formulations showed good homogeneity with absence of lumps and greasiness and within the range of skin pH (pH 6.6 to 7.0). The formulation F6 (2% HPMC K4M) was found to have optimum value of Spreadability, extrudability and viscosity. Drug content, drug entrapment and drug loading was also found to be higher for F6. Maximum release was shown by F6, which follows zero order Higuchi diffusion model. Zeta potential, SEM and DLS studies were done for formulation F6 to evaluate the characteristics of nanoparticle. Stability studies of the formulation F6 revealed that there was no significant difference in the physical and chemical parameters. Thus the formulation F6 was found to be stable for 3 months. The skin irritancy test was performed to confirm the safety of the optimized gel formulation. Comparable anti-inflammatory activity was found with the test product with that of marketed product these results indicated the rapid onset of action and higher activity during the initial periods due to their enhanced dissolution and absorption rates of formulation F6.

Phytoconstituents responsible for the anti-inflammatory activity (Skimmianine) has to be isolated by column chromatography. Structural elucidation of the responsible active constituent has to be done. Clinical trials have to be carried out after the scale up studies of the optimized formulation.

Nirmala College of Pharmacy, Muvattupuzha.
NILA 2017 – Module – V
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FORMULATION AND EVALUATION OF ATORVASTATIN CALCIUM TABLET 80MG

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Abstract

The present study was aimed to develop a robust formula for Atorvastatin Calcium 80mg tablets. The main challenge was to overcome the poor wetting, slow dissolution properties, absorption high in the GIT. It has been proposed for optimize the process and formula to obtain the desired character of granules, physical properties of tablet and dissolution profile that would match with that of Lipitor. And to optimize the final formula by changing concentration of diluent, disintegrant, binder and mixing time. Tablet is a Convenient dosage forms in comparison to the liquid formulations. Stability is of a very high order. Atorvastatin calcium is a synthetic lipid-lowering agent. Atorvastatin is indicated to reduce the risk of myocardial infarction and reduce the risk for angina. The drug being like a statin works by decreasing production of cholesterol in the liver. Granulation, compression, tablet coating these are the different stages of manufacturing of tablet. Excipients was selected according to innovator excipient list. The prepared formulation was evaluated by pre-compression characteristics and post compression evaluation test was carried out. The batch 5 is the preliminary trial from this we have gone for decreasing the concentration of disintegrant, binder and increasing concentration of diluents from this we came to know that altering the mixing time and increasing and decreasing the concentration of diluents disintegrant and binder showing almost same results. As a result altering the mixing time and by increasing the concentration of disintegrant(CCS) and binder(HPC) and decreasing the concentration of diluent(MCC PH-112) has no significant changes in the physical and chemical parameters studied with respect to Atorvastatin calcium.
FORMULATION AND EVALUATION OF FAIRNESS SERUM USING POLYHERBAL EXTRACTS

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Abstract

The aim of the present study was to formulate a cosmetic serum which will provide a faster and better fairness action by using various extracts of *Glycyrrhiza glabra Linn, Crocus sativus*, rice bran and olive oil as an important excipient for antioxidant action. The objective was to carry out extraction, and to study the phytoconstituents responsible for the fairness action in the polyherbal extract and to evaluate various physicochemical and biological properties of the formulation. The roots of Glycyrrhiza and saffron were successfully extracted with polymer (PEG) and water (1:4). Whereas the stigmas of saffron were extracted by controlled maceration by using water. Rice bran was extracted by using water. Rice bran oil was extracted using hexane by controlled maceration. The phytochemicals present in the extracts were identified by qualitative phytochemical screening, which reveals the presence of alkaloids, proteins, flavanoids, carbohydrates, tannins, glycosides, saponins and steroids in acetone, ethanol, methanol and aqueous extract of Glycyrrhiza glabra and the presence of carbohydrates, proteins, saponins, flavanoids and resins in aqueous extract of Crocus sativus.

The extracts were formulated in to 3 different serum formulations by changing the concentration of the different extracts. The after feel effect of the formulation was observed visually after applying the formulations on the skin. The formulations were having pH in the range of 5.1, 5.0 and 5.4. As the skin is having an acidic pH of around 4 – 6, this pH range of the formulations are suitable. The skin irritation studies revealed that all formulations were non sensitizing and safe for use. All the formulations were found to be of same colour and appearance. On physical evaluation of all the formulations, F2 was found to be optimum in terms of serum consistency, viscosity and spreadability. Stability studies revealed that there was no significant difference in the physical and chemical parameters. Thus the formulations were found to be stable for six weeks.
FORMULATION AND EVALUATION OF GELLIFIED EMULSION OF COAL TAR AND SALICYLIC ACID FOR THE MANAGEMENT OF PSORIASIS.

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Abstract

The aim of the study was to formulate a gellified emulsion of coal tar and salicylic acid for the treatment of psoriasis and to evaluate the prepared product for various physico-chemical characteristics and to compare with that of marketed ointment. Psoriasis is a long-lasting hyperplastic disease of skin characterized by erythematous and scaly plaques. The objective of the study was to formulate a gellified emulsion containing 5% coal tar solution and 2% salicylic acid, to evaluate prepared formulation for its physicochemical properties, to perform \textit{In vitro} and \textit{ex vivo} drug release permeation studies using Franz-Diffusion cell and to select the formula of choice based on maximum drug release from formulation. Oil in water emulsion was prepared by the process of emulsification and this emulsion was incorporated into a gel base which was already formulated. After the successful formulation of a gellified emulsion, its evaluation was performed. Which include Physical appearance, Spredablity, Consistency, Viscosity, Drug content, \textit{In vitro} drug release, Skin irritation, Stability study. Based on spreadability, drug content, \textit{in vitro} drug release, formulation (F8) containing 1.5 g carbopol 7.5 ml light liquid paraffin, 1 ml Tween 20 and 1.5 ml Span 20 was selected as the ideal batch and subjected to further studies. Stability study data of F8 formulation was also performed. Hence formulation F8 proved to be the formula of choice since it showed highest drug release. The best formulation F8 found to have many advantage over marketed formulation, they include increased patient compliance, Better drug release, Good antimicrobial activity and higher stability. The coming years will witness an excessive use of topical drug delivery system as these ensure better patient compliance and constitute an effective treatment option, devoid of systemic toxicity.
FORMULATE METFORMIN MICROCAPSULES BY USING METFORMIN HCL AND ETHYL CELLULOSE AS POLYMER

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Abstract

Diabetes is one of the major causes of death in the world. Diabetes seriously affects the body as it damages the heart, kidney, blood vessels, retina, nerves etc. Now a days, so many antidiabetic drugs are used among them metformin hydrochloride is very widely used.

Aim of this work was to formulate Metformin microcapsules by using Metformin HCl and Ethyl cellulose as polymer. The present work was designed to address the following objectives, which included preparation of microcapsules, determination of percentage yield, determination of average particle size, entrapment efficiency determination of microcapsules, and Evaluation of cumulative percentage release in vitro by using dissolution test apparatus.

Microcapsules containing highly water-soluble drug metformin HCl were successfully encapsulated in to microcapsules using ethyl cellulose as polymer in three different ratios (1:1, 1:2, 1:4).

Microcapsules made of high polymer drug ratio showed maximum drug release (53.2%) after 8 hours. The microcapsules made of equal drug to polymer ratio (1:1) showed the release of drug after 8 hours (21.15%). Thus microcapsules with equal drug polymer ratio was found to be shown the improved sustained release of drug from polymer matrix. Among the three-different drug to polymer ratio, 1:4 ratio showed maximum percentage yield, highest drug entrapment (86.46%) and maximum drug release (53.20%). The formulation with 1:1 ratio showed slow and sustained release. Therefore, it may be concluded that capsules with equal drug to polymer ratio exhibit effective sustained release characteristics. Further studies have to be carried out to confirm the systemic bioavailability of the microcapsules.
A STUDY ON COLON TARGETING OF Bacopa Monniera FOR BETTER ANTICANCER ACTIVITY


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Abstract

The study was to formulate and evaluate whole plant of Bacopa monniera extract into nanoparticle to target into colon for the treatment of colon cancer. Colon cancer is one of the most common malignancies and is thought to arise from the accumulation of mutations in a single epithelial cell of the colon and rectum. Chemotherapeutic drugs in the blood kill not only the malignant cells but also normal cells and tissues. Drugs circulated also suffer from a short half life time and rapid plasma clearance, causes the drug lost without taking any effect and also the cost is very high. So herbal drugs are used to overcome above problems.

Whole Brahmi was extracted with ethanol and water. Phytochemicals present in the extract were identified by qualitative phytochemical screening. Percentage drug release in stimulated gastric and intestinal fluid shows formulations are stable in both environment. From In-vitro release studies F3 have increased drug content and entrapment efficiency with lower % cumulative drug release. Kinetic drug release data of formulation F3 was best fit with zero order and Korsemeyer peppas model n value, which shows super case 2 transport suitable for colon targeting. The average size of formulation F3 was found to be 141.6 nm obtained from DLS and zeta potential was found to -32.7 that means nanoparticles are stable. Stability studies revealed that there was no significant difference in thephysical and chemical parameters. Thus the formulation f3 was found to be stable for six weeks.

Phytochemical constituents responsible for the anticancer activity have to be isolated by column chromatography. Structural elucidation and clinical trials have to be carried out after the scale up studies of the optimized formulation. Detailed stability studies and in-vivo bioavailability studies are to be done.

Key words: Bacopa monniera, Anticancer
FORMULATION AND EVALUATION OF SOLID DISPERSION INCORPORATED MUCOADHESIVE BUCCAL TABLET OF DOMPERIDONE

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Abstract

The study entitled “Formulation & evaluation of solid dispersion incorporated mucoadhesive buccal tablet of domperidone” was carried out with an objective of improve the solubility of Domperidone by solid dispersion technique & formulate it as mucoadhesive buccal tablet for avoiding the first pass metabolism & improve its bioavailability with reduction in dosing frequency. Domperidone is a water insoluble drug exhibiting poor dissolution pattern & it undergoes first pass metabolism hence it shows lower bioavailability. Buccal route offers advantages such as rapid absorption, higher blood levels and prolonged duration of action. Domperidone solid dispersion was prepared by using PEG 6000 in different drug:polymer ratio (1:1,1:3,1:5 & 1:7) by Fusion method & Solid dispersions were evaluated for solubility, percent drug content, dissolution efficiency, in vitro drug release studies & drug polymer interaction studies.

The formulation “FN2” (Carbopol 30mg:HPMC K4M 30mg) was taken as optimized formula based on its in vitro release & mucoadhesive strength. The formulation best fitted into Zero order kinetic. The drug release was dominated by the erosion & swelling of the polymer. The optimized formulation was kept for storage conditions at 40°C/75%RH for 3 month. There is no significant difference in the in vitro release & mucoadhesive properties of the optimized formulation after storage for this period. The present study proved that solid dispersion incorporated domperidone mucoadhesive buccal tablets give promising results with respect to mucoadhesion strength and in vitro release from the dosage form.

Further detailed stability studies & in vitro–in vivo correlation studies are to be done to establish the guarantee of efficacy & bioavailability of the formulation.
Silver and its preparations are widely known from prehistoric times as an antimicrobial agent. In nanoparticles form it possess superior antimicrobial action. The basic understanding about nanoparticle form of silver is that it can induce toxic effect in biological system if the release is not controlled. The main objective of this work is to design a polymer material which can control the release of the nanoparticles. Cellulose being a cheaper alternative is selected for this purpose. Cellulose fibre was converted into powder form by suitable chemical reaction. Silver nanoparticle was synthesized and characterised. Cellulose silver nanoparticle composite powder is synthesized and its release properties is studied using plasmonic spectra. Results indicate that initial release of silver nanoparticle were having better initial binding to its cellulose powder and released silver nanoparticle is exhibiting antimicrobial properties. Further optimisation of the composite powder for better matrices with programmable delivery is suggested in future.
INVESTIGATION OF GASTRO RETENTIVE MUCOADHESIVE MICROSPHERES OF CLARITHROMYCIN-RESIN COMPLEX FOR DRUG DELIVERY TO GASTRIC MUCOSA

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Abstract

Clarithromycin is a semisynthetic macrolide antibiotic derived from erythromycin which inhibits the bacterial protein synthesis by binding to 50S ribosomal subunit. H. pylori infection is strongly associated with chronic gastritis and duodenal ulcers. Major issues related with the incomplete eradication of H. pylori infection is the shorter residence time due to which effective concentration of antibiotic cannot be achieved in the site. One way to improve eradication of infection is by delivering the antibiotic locally in the stomach. This can be done by formulating gastro retentive mucoadhesive microspheres of drug (Clarithromycin) – Resin complex. Mucoadhesive microspheres will exhibit good adhering capacity with the mucosal tissue which provides a localised and systemic controlled release of drugs.

The drug resin complexes were prepared by batch process taking drug resin ratio of 1:1, 1:2, and 1:3. Mucoadhesive microspheres of clarithromycin-resin complex were prepared by using solvent evaporation method using mucoadhesive polymers such as Carbopol 934 and Polycarbophil in different ratios of 1:1, 1:2, 1:3, and 1:4. The drug polymer compatibility was studied by FTIR. All the formulations were subjected to various studies like particle size and shape analysis, drug content, *in vitro* mucoadhesion evaluation, *in vitro* drug release studies and *in vivo* gastric residence time evaluation. Particle size range of all the formulations was found to be in the range of $83\mu m$-$87\mu m$. Scanning electron microscopy showed sphere shaped particle with good surface morphology. Formulations with both polymers showed mucoadhesion for a period of more than 6 hours. The rate of drug release follows zero order kinetics. Gastro intestinal transit in rats was investigated by fluorescence microscopy using particle loaded with fluorescein instead of clarithromycin. Gastric residence time was found to be longer. Further, the formulations were subjected to stability studies for a period of 8 weeks at different temperature. The subjected formulation showed no appreciable changes with respect to particle size and drug content.

**Keywords:** Clarithromycin, H. Pylori, Gastroretentive, Mucoadhesion, Microspheres.
FORMULATION AND EVALUATION OF ETHOSOMES LOADED WITH ROPINIROLE HYDROCHLORIDE

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Abstract

Ropinirole hydrochloride is a new non-ergoline dopamine agonist recently introduced to treat Parkinson’s disease. It has lower oral bioavailability (50 -55%) due to its significant extensive first pass metabolism and short half-life of 4-6 hr. Also conventional anti-Parkinson’s therapy leads to re-emergence of Parkinson’s symptoms due to fluctuations in serum drug levels which demands better alternative for its delivery. To achieve sustained release of drug, a novel lipid vesicle system called ethosomes has been developed. They are soft malleable vesicles composed of phospholipids, ethanol and water which enables the drug to reach the deeper layers of skin for the systemic drug delivery. They act by interacting with the lipid bilayer thereby increasing membrane fluidity. The objective of the present study was to develop nano-sized ethosomes of Ropinirole Hydrochloride by Cold method. The formulated ethosomes were evaluated for entrapment efficiency, vesicle shape, vesicle size, zeta potential analysis and in vitro drug release study. The entrapment efficiency of the ethosomal formulation was found to be 51.3% and vesicle size less than 400 nm. The in vitro drug release was found to be 70% in 24 hrs when compared to the pure drug solution which released 99% drug in 2 hrs.

Keywords: Ropinirole Hydrochloride, Ethosome, nonergoline dopamine agonist
A REVIEW ON THE SCOPE AND CHALLENGES OF INTRANASAL ROUTE IN THE REPURPOSING OF DIABETIC DRUGS IN ALZHEIMER’S DISEASE

Gifty M Jojo, Gowthamarajan Kuppusamy

Abstract

According to The World Alzheimer Report (2015) around 46 million people are living with Alzheimer’s disease (AD) and other dementias worldwide. AD corresponds to 50–70% of all dementia cases. Still the exact cause of the disease is unknown. Currently approved drugs are working on the cholinergic and the glutaminergic hypothesis of AD. These drugs can only minimize the symptoms but don't prevent or stop the disease progression. The hypothesis of ‘impaired insulin signaling in the brain contributes to the pathophysiology and clinical symptoms of AD’ was introduced long back. Diabetic drugs including insulin were studied in various AD models. But the lack of target specificity and the poor BBB permeability of these drug candidate demands the need of target specific drug delivery system that can efficiently deliver the drug to brain and subsequently reduce the peripheral side effects. Even though several techniques are available, intranasal route of administration is considered to be one of the most versatile drug delivery route for brain targeting, since it is the direct route to the brain. This review is briefly discussing about the problems associated with repurposing of these drugs via routine dosage forms, the scope of intranasal drug delivery route for the overcoming those challenges and finally about the challenges associated with intranasal delivery of diabetic drugs.
SOLID DISPERSIONS: A NOVEL METHOD TO IMPROVE BIOAVAILABILITY OF POORLY SOLUBLE DRUGS

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Abstract

Over 40% of active pharmaceutical ingredients (API) in development pipelines are poorly water-soluble drugs which limit formulation approaches, clinical application and marketability because of their low dissolution and bioavailability. Solid dispersions are one of the most promising strategies to improve the oral bioavailability of poorly water-soluble drugs. By reducing particle size of active ingredients to the absolute minimum, and thus improving drug wettability, bioavailability may be significantly improved. There are two main mechanisms of drug release from immediate release solid dispersions Drug-controlled release, and Carrier controlled release. The advantageous properties of solid dispersions are Particles with reduced particle size, Particles with improved wettability, and drugs in amorphous state. The main disadvantage of solid dispersion is the crystallization during storage. There are different preparation methods for solid dispersions including melting method, solvent method and melting solvent method and such others. In fact, the melting method and solvent method are more common and the melting solvent method is the combination of these two methods. Here, the drugs are dissolved in a suitable solvent and mixed with the molten carrier followed by solvent removal and solidification to form solid dispersions. The drug and carrier are simultaneously mixed, heated, melted, homogenized and extruded in the form of tablets, rods, pellets, or milled and blended with other excipients for different purposes. Formulation of solid dispersions is considered as one of the most successful and effective strategies to improve the dissolution profile of poorly soluble drugs, thereby improved bioavailability.

Keywords: Solid dispersions, bioavailability, poor solubility.
Abstract

Acyclovir, an antiviral drug has oral bioavailability of about 15-30%. It shows more absorption in the upper gastrointestinal tract. The main objective of this study is to evaluate the potential of floating alginate beads as a drug carrier for Acyclovir to prolong gastric residence time of drug in its absorption window. Floating beads were prepared from sodium alginate solution containing CaCO3 as gas-forming agent using Ionotropic gelation method. In order to overcome the limitation of drug leaching during preparation and to have improved sustained release characteristics, alginate beads were prepared with the addition of polymers like Hydroxy propyl methyl cellulose (HPMC K4M), Eudragit RL 100 and Xanthan gum. Beads were also prepared by using Pectin (polyelectrolyte) containing cross linking solution. The compatibility of drug with the polymer was confirmed through the FT-IR studies. The prepared beads were evaluated for percentage drug loading, entrapment efficiency, surface morphology and in vitro release characteristics to know the effect of addition of these polymers to alginate solution and the addition of Pectin to cross linking solution. Pectin treated beads prepared with Xanthan gum not only showed improved percentage of drug loading but also exhibited drug release in the pH 1.2. So, these floating alginate beads may act as a promising carrier for Acyclovir to improve its oral bioavailability.
BIOELECTRONIC MEDICINE: ELECTRONIC DRUG DELIVERY SYSTEM

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Abstract

Electronics is deemed to have tremendous scope in the improvement of diagnostic and drug delivery devices. Miniaturization of microprocessors, along with development of biocompatible semiconductor materials can offer breakthrough in drug therapy tomorrow. Controlled drug delivery systems based on polymeric materials have captured the market replacing the conventional formulations. The author discuss the current development in the field of bioelectronics towards electronic drug delivery systems (EDDS) proposing the emergence of new subject specialties in the field of electronics and pharmaceutics that may be termed as ‘pharmacoelectronics’ and ‘electro pharmaceutics’. Many technological advancements like ActipatchTM, Intellicap®, Smart bandages etc are discussed. The basic electronic components incorporated in an electronic drug delivery device may be the drug reservoir, a power source, pumping system, microcontroller, various sensors for ambient temperature, pH, osmotic pressure, light, ion concentrations etc. The study of basic electronics and these electronic components may be an integral part of training for a future pharmaceutical formulation scientist.
DEVELOPMENT OF POROUS OSMOTIC PUMP TABLETS OF ROPINIROLE FOR ANTI PARKINSON THERAPY

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Abstract

In the present study, our objective was to develop porous osmotic pump tablets of an anti-Parkinson’s agent, ropinirole. It also aimed to demonstrate the applicability of factorial designs and thereby a statistical optimization in developing a controlled drug releasing device. Tablets were prepared by direct compression using varying amounts of microcrystalline cellulose (MCC) and sodium chloride, followed by coating with semi permeable membrane of cellulose acetate (CA) containing polyethylene glycol (PEG) 400 as a pore former. The plasticity of the membranes was adjusted using castor oil. All the formulations were evaluated for various physical parameters including in vitro drug release and the effect of osmogent and pore former were also studied. Drug release kinetics studies such as zero order, first order and Korsmeyer Peppas were carried out and compared. ANOVA in drug release of all the formulations were determined. Formulations were optimized to achieve a controlled zero order release of ropinirole for 12 hours. Drug release from the optimized formulation containing 20%w/w of PEG, without osmogent was not significantly affected by change in pH or agitation of the dissolution medium. The mechanism of drug release was further confirmed by studying the effect of osmotic pressure on drug release. The porous osmotic pump tablets of ropinirole can provide prolonged, controlled and GI environment-independent drug release.
FORMULATION AND EVALUATION OF HERBAL CREAM

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Abstract

Herbal cosmetics are of vital importance in the day to day life because of its great effectiveness and little side effects. So, in this work a herbal cream is formulated & evaluated using curcumin & aloe extract. Aloe extract was prepared by extracting coarsely powered aloe vera using petroleum ether and ethanol. Curcumin is extracted by using methanol and quantified spectrophotometrically at 425 nm. The extracts were concentrated. For selecting the appropriate and most stable formulation the various cream bases are analyzed and the best formulation was selected. The formulated cream is evaluated by dye test, homogeneity, appearance, spreadability, wetness, emolliency, type of smear and ease of removal of the cream after application. The formulated turmeric and aloe Vera based herbal face cream is a cosmeceutical that contains quantified amount of curcuminoids and aloe vera extract. It is safe and stable too.

Keywords: Curcumin, aloe Vera & emolliency
FORMULATION AND EVALUATION OF CLINDAMYCIN AND BENZOYL PEROXIDE NANO EMULGEL FOR TREATMENT OF ACNE

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Abstract

Nano emulgel have emerged as one of the most promising topical delivery system because of having dual release control system i.e. gel and nano emulsion the major objective behind this formulation is enhancing topical delivery of hydrophobic drugs clindamycin and benzoyl peroxide by formulating clindamycin phosphate and benzoyl peroxide Nano emulgel using carbopol 940. It is expected to have high viscosity, transparency, film forming proper-ties at low concentration, better penetration and high concentration gradient across skin. Moreover, antibiotic resistance by clindamycin can be overcome by combination with benzoyl peroxide. Oleic acid is used as penetration enhancer. Propyleneiglycol is used for its moisturizing and humectant action. Light liquid paraffin form oily phase of emulsion. Span 80 and tween 80 are used to promote emulsification. Carbopol 940 is a gelling agent used to in-crease consistency of formulation. The prepared Nano emulgel was evaluated for their physical appearance, pH, determination, viscosity, spreadability, ex-trudability, invitro drug release, antibacterial activity and stability. Out of nine formulations f8 showed good anti microbial activity when compared with f4.

Keywords: Nano emulgel, clindamycin phosphate, benzoylperoxoide, ex-trudability and spreadability.
NOVEL PREPARATION AND EVALUATION OF LOTION CONTAINING ALOE GEL BEADS

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Abstract

Aloe vera has been regarded as “nature’s gift” for burns and wounds and it’s soothing/moisturizing properties have afforded aloe a leading role in many cosmetic products. A new emulsion gelation method was used to prepare aloe gel beads using sodium alginate as the polymer and calcium chloride. Further the prepared beads were suspended into calamine lotion. This calamine lotion was compared with the marketed formulation. Novel lotion showed good compatibility, photoprotective activity and stability as compared to the marketed preparation.

Keywords: Aloe gel, beads, evaluation, novel and conventional calamine lotion
FORMULATION AND IN VITRO EVALUATION OF NIFEDIPINE MUCOADHESIVE BUCCAL TABLETS

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Abstract

The aim of the present study is to formulate and evaluate Nifedipine mucoadhesive buccal tablets. Nifedipine is a calcium channel blocker and is used to treat hypertension and stable angina. 12 formulations of mucoadhesive buccal tablets were prepared by direct compression method using carpol 940 in various proportions with different secondary polymers such as HPMC E15 LV, PVP K30, Sodium CMC, and HEC.

Prepared tablets were evaluated for different parameters such as thickness, hardness, weight variation, drug content uniformity, swelling index, surface pH study, in vitro drug release, and exvivo mucoadhesion study. Drug release and mucoadhesive strength were found to depend upon polymer type and proportions. The dissolution of all the prepared tablets in to phosphate buffer (pH 6.8) was controlled and followed diffusion mechanisms. The optimized formulation prepared by using carbopol 940 and sodium CMC in 1:2 ratio showed 98.8% drug release and significant bio adhesive property. The result of stability study indicates no significant changes. Nifedipine is having less bioavailability (40-50%). In order to increase bioavailability, the mucoadhesive buccal tablets of Nifedipine were prepared.
COMPARATIVE EVALUATION OF AYURVEDIC SOAPS

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Abstract

In this project Comparative Evaluation of Ayurvedic soaps tried to evaluate the quality of some of the marketed brands of soaps. For that purpose, we conducted the TFM and moisture content of the soap, it was done with the aim, that the customers are not cheated by the claimed quality of soaps. In addition to this aim, we also tried to make an Ayurvedic soap with turmeric extract curcumin and evaluated the same for the TFM and moisture content with the aim of manufacturing good quality soap. The calculated value was found to be somewhat similar to the claimed value. In addition to this we also determined the TFM and moisture content of a handmade soap using turmeric extract and it was found to have high TFM and thus good quality. From the evaluated marketed soaps Manjal 76.55 % was found to have the maximum TFM and moisture content12.78%. Handmade soap with curcumin extract was found to have TFM of 77.34% and moisture content 11.56% and thus it was to have equal quality to the soap available in the market.

Keywords: TFM, moisture content
INTERPENETRATING POLYMERIC NETWORK HYDROGEL FOR GASTRORETENTIVE DRUG DELIVERY OF AN ANTIULCER DRUG – PREPARATION AND EVALUATION

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Abstract

Interpenetrating polymeric network (IPN) hydrogel is a controlled drug delivery system which will enhance the release of short half life drug under physiological conditions. The aim of the present study was to develop and evaluate IPN hydrogel of famotidine using various concentrations of polymer, with the purpose of improving its oral bioavailability by increasing its gastro retentive time. The IPN hydrogels of famotidine were prepared by chemical cross linking process using chitosan, polyvinyl pyrrolidone and polyacrylic acid polymers and gluteraldehyde and N,N’-methylene bis acrylamide as cross linking agents. Famotidine was dissolved in chitosan gel prepared in 1% acetic acid. Polyvinyl pyrrolidone and polyacrylic acid was used in 1:1 (w/w) ratio and they were added to the solution of chitosan under continuous mixing and gluteraldehyde and N,N’-methylene bis acrylamide were added to it. Ammoniums per sulphate were lastly added to initiate the polymerization reaction. A total of 10 (f1-f8) were prepared with various concentrations of chitosan. The hydrogels were evaluated for FTIR analysis, drug entrapment efficiency, SEM, swelling study, mucoadhesive study, kinetic analysis and stability. The in-vitro release rate of preparation was evaluated by dissolution apparatus of type 2 using 0.1 N HCl as dissolution medium. F8 showed highest in-vitro release rate and superior physicochemical properties. These formulations were evaluated for stability study at different temperature and also for kinetic evaluation. The kinetic data analysis of optimized formulation showed that the drug release from hydrogel best fits to zero order model. The mechanism of drug release was found to be Non-Fickian. Finally, it was concluded that as the polymer concentration increases its swelling property, mucoadhesive power, drug entrapment efficiency and in-vitro drug release property is shown by f8 formulation where chitosan, PVP and acrylic acid is in 1:1:1 ratio. The result showed that IPN hydrogels prepared release the drug at lower pH value (pH 1.2) thus maintaining H2 receptor antagonistic action in stomach for prolonged period of time.

Keywords: chitosan, famotidine, interpenetrating polymeric hydrogel, mucoadhesion.
EARLY DETECTION AND THERAPY OF EPILEPSY USING POINT OF CARE SYSTEM (POC)

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Abstract

In epileptic patient’s recurrence of seizure is a concern and its prognosis is important. Getting seizure freedom is essential for the patients to maintain a normal risk-free life. Even though, the pharmacological treatment provides 60-70% reduction in seizures over prolonged treatment, the concerns of recurrence remain. In this work, we are analysing the common psychological and physiological complications associated with epilepsy; subsequently, precautions required during a seizure. Also, analysing the uses of point of care (POC) systems for seizure prognosis and therapy. Nicotine is believed to stabilize the mood changes in patients enabling the avoidance of upcoming seizure attacks. We are proposing a new concept focusing on mood stabilization involving a combination of a point of care application for the prognosis and prophylaxis of nocturnal seizure attack which includes a device model, a sublingual nicotine patch and transdermal nicotine patch.
OCULAR DRUG DELIVERY SYSTEM

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Abstract

Repeated applications of topical ocular drugs can cause sensitivity reactions due to frequent local instillation of antiglaucoma agents, antibiotics, antivirals, etc. leading to unusual high drug and preservative concentration at epithelial surface. The need to reduce the local and systemic side effects and improvements in ocular bioavailability led to the development of controlled ocular delivery. Various available approaches are eye ointment, gel, viscosity enhancers, prodrug, penetration enhancers, microparticles, liposomes, niosomes, ocular inserts, implants, intravitreal injections, nanoparticles, nanosuspension, microemulsion, in situ-forming gel, iontophoresis, and periocular injections. These provide continuous and controlled release of the drug to the anterior and posterior chamber of the eye. Mechanism of ocular drug absorption involve corneal permeation and non corneal permeation. Challenges in ocular drug delivery is to bypass the protective barriers of the eye without causing permanent tissue damage.
DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR SIMULTANEOUS QUANTITATIVE ESTIMATION OF SELECTED ANTI-RETROVIRAL DRUGS IN NANOFORMULATION.

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Abstract

In this work a simple, precise and economical Reverse Phase-High Performance Liquid Chromatographic method has been developed for the simultaneous quantitative estimation of Etravirine and Elvitegravir in nanoparticulate formulations. The chromatographic conditions were optimized and validated according to the standard ICH guidelines. The separation was done on a C18 column (250 mm x 4.6 mm, 5µm) using Methanol and phosphate buffer of pH(5.6) as the mobile phase in the ratio 78:22 V/V in the isocratic mode at a flow rate of 1ml/min for a short run time of 13 min. The detection wavelength was 285nm and the column temperature was maintained at 32°C. The retention times were 8.2 min and 9.6 min for Etravirine and Elvitegravir respectively. The LOD were 4.83mcg/ml and 14.63mcg/ml while LOQ were 9.25mcg/ml and 28.02mcg/ml for Etravirine and Elvitegravir respectively. The developed method was linear over 10 to 160 mcg/ml with regression coefficient of 0.999 for each. The method was also validated for specificity, precision, accuracy, sensitivity, recovery, robustness and system suitability.
ABSORPTION STUDY OF VARIOUS DRUGS THROUGH GIT-A PRACTICAL APPROACH TO pH PARTITION HYPOTHESIS

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Abstract

Predicting the extend of the oral drug absorption can be an important aspect to lead candidate selection during the drug development process. The current chapter outline the theoretical basis for the relationship between physicochemical properties of the drug molecule with pH partition hypothesis for the absorption of drugs and the mechanism of absorption of various test drugs. The initial analytical parameters for all the drugs were determined as per the official methods. In addition, a number of alternative invitro stomach and intestinal models, under stimulated body condition which facilitate more mechanistic evaluation of impact of permeability on pH partition hypothesis. The results obtained for permeability for each drug were compared with the hypothesis.

Keywords: pH partition hypothesis, permeability, calibration curve method.
COMPARITIVE STUDY OF SPF VALUES OF SUNSCREEN FORMULATIONS BY UV SPECTROPHOTOMETRY.

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Abstract

The increasing consumer awareness on the risk of sun exposure related diseases like skin cancer has promoted the usage of sunscreen products. The efficiency of the sunscreen products depend on the sunscreen protection factor (SPF) value. Due to high cost and time consumption of in vivo SPF determination methods, in vitro methods are gaining more importance. The aim of the study is to compare the SPF value of two sunscreen products with their labelled SPF values by UV spectrophotometric method. Two different commercially available sunscreen products were procured and evaluated. It is observed that the proposed spectrophotometric method is simple and rapid for the in vitro determination of SPF values of sunscreen products.

Keywords: Sunscreen, SPF, UV Spectrophotometry.
A REVIEW OF PHARMACOSOMES: THE LIPID BASED NEW DRUG DELIVERY SYSTEM

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Abstract

One of the most recent advancements in the domain of solubility enhancement lead to the development of pharmacosomes, a novel lipid based drug delivery system. These are the colloidal dispersions of drugs covalently bound to the phospholipids. They may exist as ultrafine vesicular, micellar or hexagonal aggregates depending upon the chemical structure of the drug-lipid complex. Their very small size and unique properties such as amphiphilicity, active loading of drugs, high and predetermined entrapment efficiency, stability make them an appropriate carrier for delivering drugs with precision and selectivity. They help in achieving increased bioavailability, reduce the cost of therapy and provide controlled as well as targeted release of drug. There is reduction in the drug leakage and toxicity while the therapeutic efficacy increases. It is advancing as a method used for delivery of various drugs like non-steroidal anti-inflammatory drugs, cardiovascular drugs, antineoplastic drugs and proteins. This approach as a drug delivery system certainly promises a reliable, safe, selective and precise method of drug delivery.

Keywords: pharmacosomes, micellar aggregates, amphiphilicity
FORMULATION AND EVALUATION OF FAST DISSOLVING TABLETS OF LERCANIDIPINE HYDROCHLORIDE

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Abstract

Lercanidipine hydrochloride (LH) is a long acting calcium channel blocker used in the treatment of chronic stable angina, vasospastic angina and hypertension. In uncooperative patients especially in geriatrics, the problem of swallowing is common phenomenon to poor patient compliance. To overcome this problem an effort has been made for the development of LH fast dispersible tablet. In this a solid dispersion of LH was prepared by using different polymers. The solid dispersion obtained was evaluated for drug content and dissolution studies. The dissolution study shows that formulations made using urea found to be better than the other formulations. LH tablet has been prepared with superdisintegrants by the direct compression method. Evaluation studies show that formulation containing combination of superdisintegrants is more useful.

Keywords: Lercanidipine hydrochloride, Fast dissolving tablets, Hypertension
EXTRACTION AND EVALUATION OF AN ANTI-DIABETIC ACTIVITY
OF cocus nucifera

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Abstract

Diabetes mellitus is a group of metabolic disease affects more than 100 million people (6%). And in next 10 years it may affect about five times more people than it does now. It is characterized by hypoglycemia result in impairment of insulin secretion or insulin activity. Many drugs are available as anti diabetic drug in market but through this develop a crude drug from Cocus nucifera, which have ability to control diabetes up to a level. For that the collected samples were extracted with different solvents like petroleum ether, ethanol and water. Then the extracts are evaluated for anti-diabetic activity using in vitro-alpha amylase inhibitory method. From this found that combination of shell and pericarp extract using methanol as solvent have high anti-diabetic activity and then on phytochemical analysis shows that the extract contain phenolic compounds. This work is done to evaluate Cocus nucifera as an anti-diabetic agent.

Keywords: Cocos nucifera, Diabetes mellitus, Anti-diabetic activity, alpha-amylase, phenolic compounds
Abstract

Oral therapy with Glipizide in Diabetes Mellitus comprises problems of bioavailability fluctuations and may be associated with severe hypoglycaemia and gastric disturbances. As a potential for convenient, safe and effective antidiabetic therapy, the rationale of this study was to develop a TDDS for Glipizide. Chitosan polymer was utilized in developing TDDS. Chitosan has film forming ability, bioadhesive and absorption enhancing properties. To improve the solubility of Glipizide in water, inclusion complex of Glipizide in β CyD were prepared. Effect of different permeation enhancers such as DMSO, SLS, Urea, Oleic acid and ethanol were studied. Physical parameters such as moisture content, moisture uptake, tensile strength and folding endurance were evaluated. Release studies revealed adequate release rates from transdermal films having polymer concentration 1.5% w/v (F4). Effect of Permeation enhancers on permeation of Glipizide through stratum corneum of skin were studied using full thickness rat abdominal skin. F12 which contain Oleic acid and ethanol in the ratio 1:1.5 shows high flux of drug through the rat skin as compared to other formulations

Keywords: Glipizide, chitosan, Diabetes, Transdermal drug delivery
PULSATILE DRUG DELIVERY SYSTEM AS A NOVEL BOON: A REVIEW

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Abstract

The purpose of writing this review as a pulsatile drug delivery system (PDDS) is to compile the recent literature with special focus on the different types and approaches involved in the development of formulation. PDDS are gaining importance in the field of pharmaceutical technology as the system deliver the right dose at specific time at a specific site. Some of diseases condition where in PDDS are promising include duodenal ulcer, cardiovascular diseases, arthritis, asthma, diabetes, neurological disorder, hypertension, hypercholestremia and cancer. PDDS are classified into time controlled system wherein drug release is primarily controlled by delivery system, stimuli induced PDDS in which release is controlled by the stimuli such as pH or enzyme present in the intestinal tract or enzyme present in drug delivery system and externally regulated system where release is programmed by external stimuli like ultra sound, magnetism, electrical effect and irradiation. These systems are useful in several problems encountered during development of pharmaceutical dosage form.

Keywords: Drug delivery system, Pulsatile drug delivery system
CRYO STEM CELL THE KEY FOR NEW BIRTH

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Abstract

The stem cell play an active role in health care and they help in gaining access to new research treatments before they are widely available and they also help to obtain expert medical care at leading health care facilities during the trial, they also help others by contributing to medical research and the patient may get better as a result of the experimental treatment, patients who receive the placebo are usually, but not always, given access to the treatment once the trial ends. The literature survey was carried out by searching journals, official websites, review articles and authorised books.

The survey was also carried out by examining the available case studies provided to the group. The survey was carried out by classifying the articles based on the year of publications, relevance of the topic etc. On analysing the case reports and the survey articles it was found that the cryo stem cell is an emerging field in the health care therapy and helps in the curation and prevent the progression of many diseases. The treatment of many malicious disorders like cancer, neurodegenerative disorders, diabetes, and cardiac disorders is made possible by the following therapy.

Now when reaching to the conclusion of the literature survey we came to see that the stem cell therapy is a major and inevitable therapy.
MICOROBOTICS DIAGNOSIS AND TREATMENT

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Abstract

Recent progress in microrobotics is moving us closer to a future in which tiny intelligent machines will navigate throughout our bodies. These microrobots will aid medical professionals in the diagnosis and treatment of a number of human diseases. Microrobots have the potential to revolutionize many aspects of medicine. These untethered, wirelessly controlled and powered devices will make existing therapeutic and diagnostic procedures less invasive and will enable new procedures never before possible. Robotic concepts have been traced back to about the 4th century, and today’s concepts have evolved even further, starting from tiny nanobots that could make their way into one’s blood stream, and moving onto giant robotic arms. Microrobotics has also been a major trend in today’s world. As we keep exploring as to how small circuits can actually get, it gives us a greater ability to focus on creating smaller microrobots

The aim of this review is threefold: first, to provide a comprehensive survey of the technological state of the art in medical microrobots; second, to explore the potential impact of medical microrobots and inspire future research in this field; and third, to provide a collection of valuable information and engineering tools for the design of medical microrobots

Keywords: Microrobotics, Microrobots
A REVIEW ON CUBOSOMES AND IT’S APPLICATIONS

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Abstract

Cubosomes are nanoparticles which are self-assembled liquid crystalline particles of certain surfactants with proper ratio of water with microstructure. Because of their bicontinuous system the cubic phase can be dispersed to form particulate dispersions that are thermodynamically stable for longer time and have a great potential in drug formulations. We have done studies based on the review and research articles. The purpose of review is to find out the importance and applications of cubosomes. On reviewing these articles and journals it was found that cubosomes have several applications in the field of health care including brain targeting, delivery of protein vaccines, parenteral sustained release drug delivery system etc.

Keywords: Cubosomes, Brain targeting, Protein vaccines, Sustained drug delivery system
STUDY ON MARINE DIVERSITY AS A SOURCE OF BINDER

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Abstract

Binders are the prominent inactive ingredient in development of solid dosage form. The scope of identifying the need of binder with different property and varying viscosity still exists. Sargassum wightii is brown seaweed belongs to the class Phaeophyceae, is widely distributed in tropical and temperate oceans. It belongs to the family Sargassaceae and order Fucales. Different methods were performed to extract the gum and it was evaluated for binding property and yield. The extracted gum was incorporated as binder in the formulation if tablets using Acyclovir as the model drug by wet granulation method.

Soxhlet extraction method by means of water shows good result on yield and binding property compared to other extraction methods. It shows a yield of 2.5 g and at a weight of 100g. It shows the best binding property. Hence based on different extraction methods the aqueous extraction methods by means of soxhlation is preferred for the extraction of binder from the Sargassum wightii. The newly developed binder was compared with that of the binder Acacia and Methyl cellulose, which is of standard binder. Acacia shows a binding action at a weight of 140 g and methyl cellulose shows a binding action at a weight of 160 g. By comparing with acacia and methyl cellulose the newly developed binder was found to be almost near to the range of acacia and methyl cellulose and it can be used for the formulation of suitable dosage form.
FORMULATION AND EVALUATION OF AN ANTI-DIABETIC DRUG FROM NATURAL ORIGIN

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Abstract

Diabetes mellitus is a group of metabolic disease that affects half of the world population. It is characterised by hypoglycaemia resulting from defects in insulin secretion, insulin action or both. In India 40 million people with diabetes and by 2025 this number will rise up to 70 million. This means every fifth diabetic patient in the world would be an Indian. A rich resource of nature’s plant is wealth seems promising. The selected crude substance known to have anti-diabetic activity and it is used traditionally. The current work aims to develop a drug from Cocosnucifera, which have the ability to control the diabetes up to a level. For that the collected samples were extracted with different solvents. The extract having highest anti-diabetic activity is then tested for phytochemical constituents. The extract is developed to capsule for safer administration. This works attempts to summarise and evaluate Cocosnucifera as an anti-diabetic agent

Keywords: Cocosnucifera, Diabetes mellitus, Natural source, Anti-diabetic activity, Phenolic compounds
FORMULATION DEVELOPMENT AND EVALUATION OF NISOLDIPINE EXTENDED RELEASE MATRIX TABLET

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Abstract

Nisoldipine is an extended release tablet dosage form of the dihydro pyridine calcium channel blocker. It is used for the treatment of hypertension and it inhibit the influx of calcium ion across the cellular membranes in vascular smooth muscle. It provides sustained release of drug with diminished or no side effects. We have done studies based on the review and research articles. The purpose of review is to find out the formulation parameters on development of extended release drugs. According to the release studies, it is observed that the rate of drug release increase with decrease in total polymeric content of the matrix (hydroxy propyl methyl cellulose) HPMC E15 is found to be the optimum polymer to sustain the drug release from Nisoldipine extended release matrix tablet

Keywords: Nisoldipine, Hypertension, Drug release, Polymeric content, Matrix tablet
Abstract

Binders are the prominent inactive ingredient in the development of solid dosage form. Varieties of natural and synthetic binders are available and many are in use by pharmaceutical industry. The main objective of the present study was to determine the binding property of gum extracted from a brown seaweed, Sargassum wightii belonging to the family Sargassaceae, which is widely found in tropical and temperate oceans, using acyclovir as a model drug by wet granulation method. Different precompression and post compression evaluation tests were performed to select the best binder concentration suitable for the formulation of tablet and it was found to be between 12.5 to 25 %. As the binder concentration increases, the hardness increases and friability decreases. The prepared acyclovir tablets were compared with tablets prepared using standard binders such as acacia and methyl cellulose. Friability and hardness tests were done to evaluate the mechanical strength of the tablets, while the drug release properties were evaluated based on the disintegration and dissolution studies. The granules prepared with Sargassum wightii binder shows good flow properties as that of standard binders and can be compressed into tablets. The prepared tablets disintegrate within 3 minutes and shows a complete drug release within 1 hour. Accelerated stability studies were performed to determine the stability of the formulation and it was found to be stable. Hence it is confirmed that Sargassum wightii is the best binder in the formulation of tablets in the concentration range of 12.5 to 25%.

Keywords: Sargassum wightii, acyclovir, binder, acacia, methyl cellulose
FORMULATION AND IN VITRO EVALUATION OF NIFEDIPINE MUCOADHESIVE BUCCAL TABLET

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Abstract

The aim of the present study is to formulate and evaluate Nifedipine mucoadhesive buccal tablets. Nifedipine is a calcium channel blocker and is used to treat hypertension and stable angina. 12 formulations of mucoadhesive buccal tablets were prepared by direct compression method using carbopol 940 in various proportions with different secondary polymers such as HPMC E15 Lv, PVP K30, Sodium CMC, HEC.

Prepared tablets were evaluated for different parameters such as thickness, hardness, weight variations, drug content uniformity, swelling index, surface pH study, in vitro drug release, exvivo mucoadhesion study. Drug release and mucoadhesive strength were found to depend upon polymer type and proportions. The dissolution of all the prepared tablets into phosphate buffer (pH 6.8) was controlled and followed diffusion mechanisms. The optimized formulation (F7) prepared by using carbopol 940 and sodium CMC in 1:2 ratio showed 98.8% drug release and significant bioadhesive property. The result of stability study indicates no significant changes. Nifedipine is having less bioavailability (45-50%). In order to increase the bioavailability to avoid the hepatic metabolism, the mucoadhesive buccal tablets of Nifedipine were prepared.
NOVEL APPROACHES IN PULMONARY DRUG TARGETING

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Abstract

Drug delivery to the diseased lung has been a long standing pharmaceutical objective. For drugs intended to act locally it is desirable to confine the drug action to the lung in order to eliminate inadvertent side effects that may follow absorption and distribution to the extravascular sites. Targeting of drugs to the respiratory tract has been attempted for last 40 years with bronchodilators and anti-inflammatory steroids for the effective control of asthma. In this article, we summarize the rationale behind the advances of pulmonary drug delivery system. Pulmonary drug delivery is important research area which impacts the treatment of illness including asthma, chronic obstructive pulmonary diseases and various other diseases. This article focuses on recent advances in pulmonary drug targeting. Three targeting methods such as physical, chemical and biological targeting are employed recently in pulmonary drug targeting. The literature review aims in overviewing the newer methodologies and advances in the pulmonary drug delivery formulations.

Keywords: Respiratory tract, asthma, bronchodilators, chronic obstructive pulmonary diseases.
DEVELOPMENT AND EVALUATION OF HERBAL EMULGEL FOR THE TREATMENT OF DANDRUFF INDUCED BY FUNGUS

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Abstract
Dandruff is a common skin condition. Almost all people have it at some times of their lives. Dandruff causes flaking skin and an itchy scalp. Dandruff can affect the scalp or any area on the body that grows hair. It can also affect any area with small hair follicles. The scalp is a soft tissue that covers head. The skin of scalp is thick. It contains numerous sebaceous glands. These glands make oil.

Malassezia is a yeast like fungus which lives on scalp of most healthy adults without causing problem. But sometimes it grow out of control, feeding on oil secreted by sebaceous glands. This can irritate the skin on scalp and cause more skin cells to grow. The extra skin cells die and fall off, clumping with oil from hair and scalp.

* Wrightia tinctoria * R.Br. Belonging to the family Apocynaceae is a small deciduous tree distributed in central and peninsular India. Traditionally, the plant is used to treat jaundice, seizures, wound, leukaemia, gynaecological disorders, toothache, headache, dandruff, diarrhoea and skin disorders like psoriasis. Eczema, scabies etc. * Wrightia tinctoria * exhibits excellent antifungal activity. Antifungal activity is due to the presence of active ingredient indirubin, which is a flavonoid.

Gels are a relatively newer class of dosage form created by entrapment of large amounts of aqueous or hydralcoholic liquid in a network of colloidal solid particles. Gel formulations generally provide faster drug release compared with conventional ointments and creams. In spite of many advantages of gels, a major limitation is in the difficulty in delivery of hydrophobic drugs. So to overcome these limitations, Emulgels are prepared. When gels and emulsions are used in combined form, the dosage forms are referred as Emulgels. Emulsions possess a certain degree of elegance and are easily washed off whenever desired. They also have a high ability to penetrate the skin. Emulgels for dermatological use have several favourable properties such as being thixotropic, greaseless, easily spreadable, easily removable, emollient, non-staining, water soluble, longer shelf life, transparent and pleasing appearance.
A REVIEW ON DISSOLVING MICRONEEDLE AS A TARGETED DRUG DELIVERY SYSTEM

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Abstract

Drug delivery using microneedle is a novel method of drug delivery. Microneedle is like conventional needles only fabricated in micro scale. The advantage of using microneedle is that it does not pass the stratum corneum. The dosing in microgram quantities can be done by this type of needle. The mechanism of action can be based on temporary mechanical disruption of skin. The drug, in the form of biomolecules, is encapsulated within the microneedles, which then are inserted into the skin the same way a drug like nitroglycerine is released into the bloodstream from a patch. The needle dissolves within minutes, releasing the trapped cargo at the intended delivery site. The review covers the various methods of drug delivery like Poke with patch approach, Coat and poke approach, Biodegradable microneedles, Hollow microneedles and Dip and scrape. The various methods of preparation of microneedles include molding, casting, laser cutting. The vivo safety assessment and the evaluation of microneedle have shown that this technique can be used safely. There are various advantages of microneedle transdermal drug delivery methods over other techniques which help to make it successful delivery of drug.

Keywords: Transdermal drug delivery, Microneedle
NOVEL APPLICATION OF CURCUMIN

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Abstract

Curcumin, a yellow bioactive component of Indian spice turmeric obtained from Curcuma rhizomes, especially Curcuma Longa (Turmeric) is known to have a wide spectrum of biological applications. In spite of various astounding therapeutic properties, it lacks in bioavailability mainly due to its poor solubility in water. Functional food derived substance curcumin, a primary component of natural turmeric (Zingiberaceae) its range of reported pharmacological effects, including anti-oxidants, anti-inflammatory and anti-tumor. Curcumins are limited in its clinical applicability by its low bioavailability during oral administration. It is a powerful bioactive agent and well reputed anti-oxidant. It also exhibits anti-cancerous, anti-inflammatory and anti-tumor activities and thus has a potential against various malignant diseases. Curcumin has been used extensively in ayurvedic medicine as it is non-toxic and exhibits a variety of therapeutic properties. It has been used in traditional medicine as a household remedy for various diseases including biliary disorders, anorexia, cough, diabetic wounds, rheumatism and sinusitis. Clinically, curcumin has already been used to reduce post-operative inflammation.

Keywords: Anti-Cancer, Hypcholesteremic Activities
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COMPUTATIONAL DRUG DESIGNING STUDIES OF BENZOFURAN DERIVATIVES TARGETTING CMET PROTO ONCOGENE FOR OVER COMING ANTI-EGFR THERAPY RESISTANCE

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Abstract
cMET, also known as hepatocyte growth factor receptor are protein tyrosine kinases that play important role in various cellular processes like cell differentiation, growth, cell motility and apoptosis. Hepatocyte growth factor is the natural ligand that binds to semaphorin domain, the N-terminal domain to induce changes within the cell to produce cancer. Mutational status of KRAS gene results in primary resistance in chemo refractory patients resulting in decreased efficiency of anti-EGFR therapy in advanced colorectal cancer and non-small cell lung carcinoma and hence acts as a valid target for drug designing. The target protein was characterized based on their primary and secondary structure using Protparam and Sopma tools and the pocket analysis was carried out using CASTp. Structure activity relationship of Benzofuran reveals that the attachment of certain functional groups like hydroxyl (-OH), methoxy (-OCH$_3$) and halogen groups at various positions contribute to elevation in the puissance of inhibiting the oncogenically dominant receptors. Substitution of benzyol group at the second position positively modulates the antitumor activity. The receptor (PDB ID: 3C1X) was docked with benzofuran derivatives and ADMET studies were additionally performed using Biovia Discovery Studio v 17.2. Eight newly designed eight benzofuran derivatives were identified as a potent inhibitor of EGFR receptor when compared with the reference drugs. Thus docking and ADMET studies helps to identify new synthetic molecules as a potent inhibitor of cancer.
ANTAGONISTIC EFFECT OF CIPROFLOXACIN ANALOGS ON DNA GYRASE: INSIGHTS FROM MOLECULAR DOCKING STUDIES

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Abstract

Ciprofloxacin is a broad spectrum fluoroquinolone antibiotic which act by inhibiting the DNA gyrase(type II topoisomerase), an enzyme involved in DNA replication in bacteria. But resistance to fluoroquinolone emerges as a problem and this warrants the development of a new fluoroquinolone analog with improved activity. SAR reveals that the 7th position of ciprofloxacin is responsible for antibacterial activity. Quaternary ammonium compounds are bactericidal agents that exhibit a multimodal mechanism of action, causing bacterial membrane lysis and inactivation of membrane enzymes and benzimidazole is a purine mimic that inhibit topoisomerase directly. The aim of the study is to design new ciprofloxacin benzimidazole and quaternary ammonium analogs by modification of the 7th position of ciprofloxacin and to determine its docking affinity with DNA gyrase. All the PDB ID’s of DNA gyrase were identified. The protein characterization was performed using Protparam and Sopma tools. The newly designed ligands were sketched using Biovia Draw and were subjected to screening for Lipinski rule of five. These ligands were then docked with DNA gyrase (PBD ID: 5MMO) using Biovia Discovery Studio v.17. The binding energies of ciprofloxacin linked benzimidazole and N-methyl pyrrolidine tightly bound to the macromolecule helps to identify the augmented inhibitory compounds that serve as valuable drug candidates better as compared to standard drug, Ciprofloxacin. ADMET studies were also performed and the results were implicated to develop new ciprofloxacin analogs with improved antibacterial activity.
IN-SILICO DESIGN, SYNTHESIS, CHARACTERISATION AND BIOLOGICAL EVALUATION OF PYRAZOLE DERIVATIVES FROM PARA BROMO - BENZOIC ACID

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Abstract

Pyrazole is an organic compound with formula C₃H₃N₂H. It is a heterocycle characterised by a 5-membered ring of three carbon atoms and two adjacent nitrogen atoms. Numerous pyrazole derivatives have been found to possess a broad spectrum of biological activities like anti-bacterial, anti-convulsant, analgesic, anti-microbial, anti-inflammatory, anti-diabetic, sedative, anti-rheumatic, anti-cancer and anti-tubercular activities. The compounds were synthesised by normal conventional technique in the lab. All the synthesised compounds were screened for anti-bacterial activities at three different concentrations (100µg/ml, 250µg/ml, and 500µg/ml) against *Pseudomonas aeruginosa* (Gram–ve) and *Bacillus subtilis* (Gram +ve) by cup plate agar diffusion method and MIC. *In-vitro* anti-inflammatory activity of the synthesised derivatives was evaluated by HRBC membrane stabilization method using Diclofenac Sodium as standard. All the synthesised derivatives were tested for their short term in-vitro cytotoxicity using Dalton’s Lymphoma Ascites cells (DLA) by means of Trypan blue exclusion method. The anti-cancer activities of the compounds were represented as percentage cell death. From the results it was calculated that the synthesised compounds are capable of managing inflammation, bacterial infections and cancer. Hence this compound may be considered as one of the potential anti-inflammatory, anti-bacterial and anti-cancer agents.

**Keywords:** Pyrazole, Dalton’s Lymphoma Ascites Cells, Trypan blue exclusion method
IN-SILICO DESIGN, SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL EVALUATION OF DERIVATIVES OF ISOFLAVONOIDS

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Abstract

Isoflavones (3-phenyl chromen-4-one) nucleus is a privileged structure in the field of drug discovery. It is an important class of oxygen heterocycles with a wide range of biological activity. 5 different acid chloride derivatives of 7-O substituted 4-ethoxy flavones were synthesised through Deoxy benzoin pathway. The IR spectra data confirmed the structures of 7-O substituted 3-phenyl chromen-4-one (isoflavone) derivatives. The mass and $^1$HNMR spectral data confirm features of the synthesized isoflavone derivatives. Docking studies for the anticancer activities of the derivatives were done by using Arguslab- Schrodinger software. The report shows that the acetyl derivative of isoflavone has the best binding capability and also that all the derivatives have almost equal range of activity. Acetyl derivative of isoflavone showed significant cytotoxicity at high concentration and other compounds show moderate activity. Benzoyl and acetyl derivatives of isoflavone showed excellent antimicrobial activity and promising anti-inflammatory activity. In future a detail SAR study’s will assist better drug designing of next generation anti-infective particularly against gram positive organism. The present work lightens a docking model to medicinal chemistry of antimicrobial isoflavone which help in identifying structural determinants responsible for the activity.

Keywords: Isoflavones, Docking, $^1$HNMR, Deoxy benzoin pathway.
STUDY OF ABSORPTION KINETICS OF SYNTHETIC FOOD COLOURS

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Abstract

Colouring agents are most commonly employed all most all kinds of pharmaceutical dosage forms. The rationale behind use of colouring agents can be technical or aesthetic purpose. A colour additive as defined by US-FDA regulation is any dye, pigment or other substances that can impart colour to a food, drug, or cosmetic or to the human body.

They are potent in nature and small concentration are sufficient in order to establish their said purpose

The objectives of the study involve the;

- Analysis of synthetic food colours, orange red and apple green by colourimetry
- Preparation of pectin beads by inotropic gelation method using pectin and calcium chloride
- Study of adsorption kinetics of synthetic food colours orange red and apple green using *Langmuir isotherm, Freundlich isotherm* and *temkin isotherm*

First, we prepared the stalk solutions of orange red and apple green separately. the absorbance value was taken at $\lambda_{max}$ of 483nm for orange red and 423nm for apple green. Then we plotted a standard graph. The pectin beads were prepared by inotropic gelation method. The beads were then coated with food colour solution

Adsorption isotherm studies were conducted at a constant temperature of 303K (kelvin) using 5gm composite. That was soaked in 50ml dye solution for a total of 90 min. The absorbance was observed in an interval of 15, 30 and 45 minutes at 483nm and 423nm respectively. Adsorption isotherm are plotted. The study of adsorption kinetics was done by using *Freundlich isotherm, Langmuir isotherm* and *temkin isotherm*.
Abstract

Druglikeness is a complex balance of various molecular properties and structural features which determine whether a particular molecule is similar to the known drugs. The methods which determine the druglikeness properties are scoring methods and Lipinski's rule of five. Cyanopyridines are a common structural moiety in pharmacologically important molecules with many pharmacological activities.

The compounds possessed desired physicochemical, druglikeness properties and showed no violation with lipinski's rule of five. Cyanopyridines were synthesized from chalcones by the condensation of substituted acetophenones and aldehydes. Their structures are in agreement with IR, NMR, Mass analysis data. These results states that synthesized cyanopyridines are found to be good lead molecules for further synthesis.

Keywords: Chalcones, Cyanopyridines, Physicochemical, Druglikeness properties.
NERIUM OLEANDER ON ALCOHOL WITHDRAWAL SYNDROME AND ALCOHOL WITHDRAWAL INDUCED ANXIETY

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Abstract

Present study evaluates the beneficial effect of Nerium oleander (NO) on alcohol withdrawal syndrome and alcohol withdrawal induced anxiety. Chronic administration of alcohol was achieved by modified liquid diet for 21 day. Hydro alcoholic extract of NO was also given for the 21 days during the period of chronic alcohol consumption as per the treatment group. Alcohol withdrawal syndrome (AWS) like agitation, tremors, wet dog shaking, stereotyped behavior and tail stiffness were observed for 5 min at ½, 1, 2, 4, 6 hrs of alcohol withdrawal. During the same time anxiety was observed after the alcohol withdrawal by using elevated plus maze. It was observed that behavior changes significantly (p<0.01) improved in NO treated rats compared to negative control group. Even the level of anxiety were found to be significantly decreased in NO treated group of rats compared to negative control group in alcohol withdrawal induced anxiety animals. The present study concludes that hydro alcoholic extract of NO provides an alternative treatment for the management of AWS.
IN SILICO DESIGN, SYNTHESIS AND INVITRO ANALYSIS OF SOME NOVEL 3,4-DIHYDROPYRIMIDIN-2-ONE DERIVATIVES FOR BREAST CARCINOMA

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Abstract

Current research work deals with the design, synthesis and invitro analysis of some novel 3,4-dihydropyrimidin-2-(1H)-one derivatives for breast carcinoma. The derivatives designed were subjected to in silico docking studies using BIOVIA Discovery Studio. The receptor employed for the study is the Histone deacetylase protein (1QOB). All the compounds showed good interaction with the HDAC protein. ADMET analysis and Lipinski rule were performed using Biovia Discovery studio and molinspiration. Based on all these data, three compounds were selected for the synthesis. Compounds were synthesized using three component one pot synthesis. The derivatives obtained were found to be pure. Different analytical methods like UV, FTIR, \(^1\)H NMR, \(^{13}\)C NMR and Mass spectrometry were performed to obtain the data regarding the structure of the three synthesized derivatives. The derivatives were then screened for their antioxidant property by using DPPH assay. Anticancer activity of the derivatives were tested in vitro by using 4T1 cell lines and normal CHO cell lines.
MOLECULAR DOCKING AND ADMET STUDIES OF SUBSTITUTED 1, 4-BENZOQUINONE COMPOUNDS AGAINST PTEN GENE IN PROSTATE CANCER

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Abstract

Prostate cancer is a condition of uncontrolled growth at the prostate gland of male reproductive system. PTEN (phosphatidylinositol tensin homolog), is a tumour suppressor gene present in the oncogenetic pathway which helps in dephosphorylation of PIP3 to PIP2 and is a negative regulator of PI3K pathway. Deletion of one copy of PTEN gene triggers oncogenesis and activates PI3K (Phosphotidylinositol-3-kinase) pathway inducing cancer progression. PTEN has been selected as target protein site. 1, 4-benzoquinone and substituted 1, 4-benzoquinone analogues found wider application as antitumor agents. Quinone compounds has got a direct action upon the PTEN gene site. Docking studies were done against the selected protein by taking wortmannin as the standard drug. Wortmannin is a first generation PI3K pathway inhibitor which is highly reactive and have a shorter half-life. Insilico docking studies were done for the substituted 1,4-benzoquinone compounds with the help of discovery studio 2017 and 3-hydroxy-1,4-benzoquinone compound has shown a better docking score than the standard drug wortmannin thereby modulates the activity of PTEN protein and found application in the treatment of PTEN deficient prostate cancer.

Keywords: Prostate cancer, PTEN, PI3K pathway, 1, 4-benzoquinone, Wortmannin.
Abstract

Discovery and development of effective as well as safe drug has brought a progressive era in human healthcare that is accompanied by the presence of drug resistant bacterial strains. There is constant need of antibacterial agent having novel mechanism of action to act against pathogenic organisms.

Thiazoles are class of organic compound related to azoles with a thiazoles as the functional group. Thiazoles are aromatic, heterocyclic organic compound which have five membered ring structures with molecular formula C₃H₃NS. As heterocyclic compounds are interested for its theoretical implications due to the synthetic procedure and pharmacological and industrial significance, various derivatives can be synthesised by different methods. It has been noticed so far that, modifications on thiazole moiety displayed valuable biological activities. These modifications can be used as potent therapeutic agents in future.

Various thiazole derivatives are reported to posses broad spectrum of pharmacological activities like anticancer, antidiabetic, anticonvulsant, analgesic, antimicrobial, anthelminthic, activity. This review was focused on thiazole and its recently synthesised derivatives that posses different biological activities.

Keywords: Thiazole derivatives, Biological activities.
A REVIEW ON STUDIES CONDUCTED ON THE PLANT *PSIDIUM GUAJAVA*

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Abstract

In this era, the use of herbal products are increasing in developing countries. *Psidium guajava* family Myrtaceae has long history of traditional use of wide range of ailments. The aim of this study was to review the literatures on evaluation studies conducted on *Psidium guajava*. Various sources were used to know the extend of chemical constituents and pharmacological effects.

The chemical composition include phenol, tannins, glycosides, flavonoids, beta-setosterol, guajanoic acid, uroslic acid etc. Many studies demonstrated various pharmacological effects of psidium guajava like anti-diarrhoeal, anti-microbial, anti-diabetic, anti-ulcer, hypolipidemic, anti-hypertensive etc.

**Keywords:** *Psidium guajava*, chemical constituents, pharmacological actions.
A REVIEW ON BENEFICIAL EFFECTS OF FLAVANOIDS ON ISCHEMIC HEART DISEASE

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Abstract

Ischemic Heart Disease (IHD) is the generic designation for a group of closely related syndromes resulting from myocardial ischemia—an imbalance between the supply and demand of the heart for oxygenated blood. Recent works show that unique flavonoids are present in hops and beer that may be used in preventing human diseases attributed to free radical damage. Recent results with flavonoids suggest that this groups maybe studied for their antioxidant action. Effects of flavonoids in tea have produced potential mechanisms such as reducing thrombosis, blocking expression of cellular adhesion molecules, etc. to underlie the effects. The future of flavonoids as class of food components important for health appears bright. Evidences suggest that frequent consumption of some foods rich in flavonoids is important for optimal health. At least certain flavonoids may well deserve considerations for making dietary recommendations for intake levels. Beyond this, it is even possible that we could understand the mechanism of action for individual flavonoid, e.g. inhibiting platelet aggregation. These compounds may provide a molecular platform for new classes of pharmaceuticals directed towards cardiovascular health improvements.

Keywords: Ischemic heart disease, Flavonoids
REVIEW ON EFFECT OF ANTIFUNGAL ACTIVITY OF SYNTHESISED COUMARINS

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Abstract

As health care has been improved worldwide, the number of immunocompromised patients has been increased to a greater extent and they are highly susceptible to various pathogenic microbes and Candida albicans has been prominent among the fungal pathogenesis they are highly resistant to various antifungal agents. The infection caused by Candida albicans is commonly known as candidiasis. Literature surveys show that coumarins possess significant antifungal activity. Coumarins are organic chemical compounds of benzopyrone class. They can be synthesised from phenols via peckmann condensation using ethylacetoacetate. The antifungal activity of coumarin derivatives can be evaluated by agar well diffusion method.

Keywords: coumarins, Candida albicans, Antifungal activity
HPLC FINGERPRINTING: A NOVEL METHOD FOR EVALUATION OF HERBAL DRUGS

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Abstract

Chromatography is one of the fast emerging tools by which the quality control and fingerprint of herbs can be maintained. Using this technique, the identification of various chemical markers and also identify the same herbs in combination. Application of TLC/HPTLC in testing of phytoconstituents from invalid herbal drugs and fingerprint characteristics of the herbal drugs are reviewed in this paper. HPTLC fingerprint of herbal medicine is a chromatographic pattern of extract of some common chemical component of pharmacologically active compounds. By using chromatographic fingerprint the authentication and identification of herbal medicine can be accurately conducted even if the amount and concentration of chemically characteristic constituent is not exactly the same for different samples of drugs. Hence it is very important to obtain very reliable chromatographic fingerprints that represent pharmacologically active and chemical characteristic component of herbal drugs.
DEVELOPMENT OF AN ALTERNATIVE METHOD FOR THE SEPERATION OF ACTIVE CONSTITUVENT OF CARICA PAPAYA LATEX

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Abstract

We all are familiar with papaya which is scientifically known as *Carica papaya* belonging to the family Caricaceae. Papain belongs to a family of related protein with variety of activities including endopeptidase, aminopeptidase, dipeptidyl peptidase and enzymes with both exo and endo peptidase activity. It is a sulfhydryl enzyme and contains several proteolytic enzymes.

As what is experienced in various different methods of preparation of papaya, fungal as well as microbial contamination is a major drawback of all the reported methods. Hence we thought an alternative method to overcome the above experienced problems.

When shallow cuts are made on fully grown, but unripe fruits will cause a milky sap or latex to ooze out. It is collected, dried and termed as crude papain. In this method it is coated on silica gel and dried. The dried extract was preserved in a freezer and was used for qualitative and quantitative studies.

Chemical tests were performed on chloroform eluate, ethyl acetate eluate, Methanol eluate and Water eluate. In the water eluate, ethyl acetate eluate, Ethanol eluate and methanol eluate chemical tests for proteins were answered.

It is also important that chemical tests for protein were not answered by petroleum ether eluate. Hence LCMS studies were performed on the ethyl acetate, ethanol, methanol and water extracts.

In the LCMS chromatogram of ethanol eluate an M/Z peak similar to the mass of β-carotene was detected. In the aqueous / water eluate, an M/Z peak at 349.98 was detected and can probably due to ascorbic acid dimer.
Sneha V. R*, Gopika Gopan, Nagalekshmi. R, Dr. K.G.Parthiban

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Abstract

Curcuma longa L (pachamanjal) and Curcuma aromatic Salisb (kasturimanjal) belongs to family Zingiberaceae. Turmeric traditionally used effectively in ayurvedic system of medicine in certain specific treatment like “Panchakarma”. According to the journal of the American chemical society turmeric contain a wide range of antioxidant, antiviral, antibacterial, antifungal, anti- carcinogenic, and anti-inflammatory properties.

The phytochemical and antimicrobial investigation on different extracts of Curcuma longa L and Curcuma aromatic Salisb were prepared by using hexane, ethanol, chloroform and petroleum ether by maceration technique. The different extracts were subjected to preliminary phytochemical investigation. For the optimization purpose Chromatographic technique like TLC were done. Comparative antimicrobial studies against Bacillus subtilis and Klebsiella pneumonia of different extracts were carried out using Levofloxacin as standard by well diffusion method. Preliminary phytochemical investigations of Curcuma longa L and Curcuma aromatic Salisb revealed the presence of alkaloids, saponins, flavonoids, proteins, amino acids and carbohydrates. From TLC using the mobile phase methanol:chloroform in the ratio 1:30, ethanolic, hexane, pet. Ether and chloroform extracts of Curcuma longa L and Curcuma aromatic Salisb showed 3:1:1:2 and 1:1:1:2 numbers of spots respectively. From the comparative antimicrobial studies hexane extract of Curcuma longa L showed maximum zone of inhibition against Bacillus subtilis and ethanolic extract against Klebsiella pneumonia respectively. From the comparative antimicrobial studies ethanolic extract of Curcuma aromatic Salisb showed maximum zone of inhibition against Bacillus subtilis and ethanolic extract against Klebsiella pneumonia respectively.
A COMPARATIVE STUDY: ANTIOXIDANT & ANTIBACTERIAL ACTIVITIES OF GREEN TEA LEAVES AND GRAPE SEED ETHANOLIC EXTRACTS

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Abstract

The aim of the study was to compare the antioxidant and antibacterial activities of green tea leaves and grape seed ethanolic extracts. The objective was to prepare extracts from grape seed and green tea, to conduct phytochemical screening test, antimicrobial studies and antioxidant activity. Grapes (Vitis vinifera) have been heralded for their medicinal and nutritional value for thousands of years. Grape leaves were also used to stop bleeding, inflammation, pain etc. Unripe grapes were used to treat sore throats. Ripe grapes were used to treat cancer, smallpox, kidney, liver diseases etc. The tea has been cultivated for centuries. Green tea was made from unfermented leaves and contains the highest concentration of powerful antioxidants called polyphenols. In traditional medicinal system, it was used as stimulant, diuretic, astringent, regulating body temperature, blood sugar, improving mental process etc.

The green tea leaves were collected from Wayanad plantation and grapes was bought from local market and separate the seeds. Both were dried, powdered and its ethanolic extract were prepared separately with ethanol and water (7:3). The antimicrobial activity was conducted in Bacillus subtilis and Staphylococcus aureus by using Kirby Bauer method. The antioxidant study was performed by using Diphenyl picryl hydrazyl (DPPH) method. And the Phytochemical screening test was performed to determine the presence of Alkaloids, Flavanoids, Carbohydrate and Tanins. From the comparative study, the active constituent of green tea and grape seed was found to produce a synergetic effect. Since the reactive oxygen species are the base for the occurrence of many diseases such as cancer, obesity, diabetes and cardiovascular diseases which can be effectively managed by the synergetic activity if both active constituents are been formulated together.
ANTIMICROBIAL POTENTIAL OF PTEROSPERMUM CANESCENS, HYDROALCOHOLIC LEAF EXTRACT


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Abstract

In the present investigation, preliminary phytochemical screening and antimicrobial potential of the petroleum ether, chloroform and ethanolic leaf extracts (100, 50, 25 mg/ml) of Pterospermum canescens, (Sterculiaceae) were carried out against certain gram-positive (Bacillus subtilis, Staphylococcus aureus, Streptococcus pneumoniae) and gram-negative (Proteus vulgaris, Escherichia coli, Vibrio vulnificus) bacteria and fungi (Aspergillus niger, Candida albicans) by detecting the zone of inhibition using agar well diffusion method. Preliminary phytochemical screening showed the presence of alkaloids, flavonoids, phenolic compounds and steroids. Petroleum ether, chloroform and ethanolic leaf extracts (100, 50, 25 mg/ml) exhibited significant antimicrobial activity against the various bacteria and fungi using the respective standard drugs (10 µg/ml).
IN-VITRO ANTIOXIDANT IC50 CAN USE AS QUALITY CONTROL TOOL FOR CONTROVERSIAL SOURCE OF PUNARNAVA PLANT LEAVES & ITS PRODUCT

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Abstract

Punarnava is a very common plant, distributed throughout India. It belongs to controversial source of drug too. The emphasis is given for leaf portion due to potential usage as medicine by south Indians. The present study involves the evaluation of In-Vitro antioxidant potential of alcoholic extract will prove the quality & efficacy. The leaf extract was Vacuum filtered and partitioned by using petroleum ether to remove the Resinous and lipids. METHOD 1: Nitric oxide inhibition was estimated by Naphthylethelene diamine dihydrochloride (0.1%w/v). The concentration of nitric acid was assayed at 540nm. Ascorbic acid was taken as reference. METHOD 2: Free radical scavenging activity of 2, 2-diphenyl-3-picryl hydrazine (DPPH) radical was measured using 0.1mM. The absorbance was measured at 515nm. The preliminary chemical test indicates the presence of Flavonoids & Tannins. The nitric oxide radical inhibition assay showed the IC50 value is 23.42 mcg /ml. The result of DPPH scavenging activity showed the IC50 value is 67.18 mcg /ml. The conclusion of these methods suggest that Ethanolic leaves extract possess free radical scavenging Potentiality, it can be apply for the quality and efficacy control tool for raw material and finished product analyzing by simple visible Spectrophotometer. But further studies are required for Conformity & confidence.
A REVIEW ON INSECTS HAVING MEDICINAL USES

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Abstract

Insects and the substances extracted from them have been used as medicinal resources by human cultures all over the world. Some of them which have much more significance in medicine are honey bee, fly (maggots), blister beetles. Bee’s honey is a valuable product of nature with time-proven, universally accepted medicinal, dietary and cosmetic properties. Honey can be used singly or in combination with other ingredients in treatment of various diseases. It also has the rare and invaluable quality of enhancing the properties and actions of the medicinal substances with which it combines. While due to its antioxidant properties bee’s honey acts as a rejuvenator, it is also an important ingredient in beauty culture as a moisturizer and a conditioner. It is used for the treatment of traumatic wounds and necrotic wounds such as pressure ulcers, diabetic ulcers, neurovascular and vascular ulcers, osteomyelitis, postsurgical wound infections, and burns. We should recommend maggots therapy in hospitals due to its cost effective rapid debridement of dead tissue and ecofriendly nature. Beetles of the family Meloidae (blister beetles) are often reported in pharmacological literature because of their content of cantharidin. High concentrations of cantharidin in the blister beetle tissues favored their use in pharmacological practices including poisoning, abortion, skin blistering and even as a powerful aphrodisiac. There is no doubt that insects are potentially a more efficient source of many fascinating facets for mankind and others vertebrates. Establishment of mass breeding insectaries with modern artifacts such as raising them in artificial diet or through biotechnological intervention could provide a hope for golden aspects for income generation too.
ST. JOHN’S WORT: EFFECTIVE REMEDY FOR DEPRESSIVE DISORDERS

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Abstract

Presently, depressive disorders can be effectively treated with conventional antidepressants. But the adverse drug reactions associated with them were more and many difficulties were there for the common people to afford due to its high cost. Therefore, a need for an effective low cost and well tolerated antidepressant therapy would thus be of tremendous importance. From the literature review conducted, it was clear that St. John’s wort (Hypericum perforatum) was exactly such a medication and hence a systemic review regarding its efficacy and safety as an alternative antidepressant therapy was conducted.

The literature survey was carried out by searching journal, official websites, review articles and authorized books. The survey was also carried out by classifying the articles based on the year of publication, relevance of topic etc, which revealed that St. John’s wort was the best researched herbal remedy for multiple depressive disorder (MDD). It was one of the leading psychotherapeutic phytomedicines for the treatment of mild to moderate depression and datas were highly promising. Preparations from SJW extract used in the treatment of depression in many countries and represent as an accepted alternative to synthetic antidepressants or behavioural therapy. This study mainly provides information regarding the active constituents such as Hypericin and Hyperforin present in St.John’s wort extract which show maximum antidepressant activity.

Keywords: Hypericum perforatum, Hypericin, Hyperforin, efficacy, safety, antidepressants, St. John’s wort
A REVIEW ON PHARMACOLOGICAL ACTIVITIES OF PIPERINE

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Abstract

Piper Longum and Piper Nigrum Whose ethanobotanical importance has been realized long back, which contain Piperine as one of the active principle. Now it is one of the active ingredient of modern medicine and have Wider application against various diseases. The review literature collectively presents the scientifically proven pharmacological activities like enhanced hepato protective, anti-asthmatic activity, anti-cancer activity, anti-depressant activity, immuno-modulatory activity, anti-inflammatory activity, anti-venom activity etc. Research are still going on to prove the other activities of piperine. Piperine also displays antipyretic, analgesic, antifungal action. A recent study shows that piperine the irritant principle in black pepper is more effective than capsaicin in the desensitization of human TRPV1. This Findings makes possibility that piperin can be used as chemical template for the design of improved TRPV1 agonist. Multiple activities exhibited by this alkaloid can be attributed to prepare large number of medical formulations in pharmaceutical industry.

Key words: piperine, Ayurvedic medicine, Pharmacological activities.
A REVIEW ON ANTI-SNAKE VENOM ACTIVITY OF INDIAN PLANTS.

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Abstract

Snakebite envenoming constitute a highly relevant public health issue on a global basic, although it has been systematically neglected by health authorities in many parts of the world. So, snakebite is a global medical problem especially in the rural areas of the tropics with about 40,000 deaths each year. India, more than 200,000 cases are reported and an estimated 35,000 to 50,000 people die of snakebite every year. The commonest Indian venomous snake are, Krait (Bungarus caeruleus), cobra (Naja naja), Sawscaledviper (Echis carinatus), and Russell’s viper (Vipera russelli). Andrographis panicivulata and Aristolochia indica plant extracts possess potent snake venom neutralizing capacity and could be used for therapeutic purposes in case of snake bite en venomations. Plants like Mimosa pudica, Acorus calamus and Withania somnifera, Mangifera indica are found to be effective in inhibiting the enzymes present in snake venom. Atritrpenoid from leucas aspera namely 1-hydroxy, tetratriacontane-4-one (C_{34}H_{68}O_{2}) could effectively counteract and neutralize the toxicity of cobra venom with reference to the antioxidant and histological dearangemet (LPO) activity in different vital organs. Ethanolic extract of fruits of Piper longum and piperine are responsible for antivenom activity. Several plant extracts rich in pharmacologically active compounds have shown to antagonize venom of several species. Antiveom effect of about 25 plant species are studied in this review article.

Keywords: Anti-venom, Snake bite, Venomous snakes, Anti-venom plants.
SCIENTIFICALLY PROVEN HERBAL ANTICANCER DRUGS – A REVIEW

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Abstract

Cancer is often deadly and affects a considerable number of people worldwide. Ongoing research is being done throughout the world to seek out effective treatments for cancer, including the use of plants to relieve and treat cancer patients. Their treatment makes use of the compounds naturally present in plants that are known to inhibit or kill carcinogenic cells. Several reports describe that the anticancer activity of plants is due to presence of antioxidants (viz., vitamins, carotene, enzymes, minerals, polysaccharides, polyphenols, flavanoids, lignins, xanthones, etc… A number of medicinal plant extracts are being used against cancer in different systems of such as Ayurveda, Unani and Siddha, but only a few of them have been scientifically explored.

Reviews are done on various medicinal plant extracts : Grape seed extract, Syzygium aromaticum .L (clove), Dendrophthoe pentandra (clove mistletoe leaves extract), Aloe vera, Green tea, Cymbopogan citrates (lemon grass), Curcumin, Liquorice, Turmeric, Neem, Ginger, Tulasi, Allium sativum (garlic),

Our review shows that medicinal plants can be promising sources of natural products with potential anticancer activity. The review will guide the selection of some plants species for further pharmacological and phytochemical investigations and thus can scientifically validate their traditional uses.

Keywords: Cancer, Antioxidants, Polyphenols
A REVIEW ON AROGYAPACHA, AN ENDANGERED PLANT ENDEMIC TO WESTERN GHATS

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Abstract

An endangered species is a species that is in danger of extinction throughout of all or a significant portion of its range. Arogyapacha (Trichopus zeylanicus subspecies travancorius) an Endangered plant in the Western Ghats of India. It found endemic to Agastya hills of Kerala and is used by the local ‘Kani’ tribes as a health food for getting instant stamina, evergreen health and vitality. The plant is reported for varied ethnic medicinal uses include immunomodulatory, hepatoprotective, aphrodisiac, antioxidant, DNA protecting antimicrobial and cytotoxic properties. The plant formulations of Arogyapacha can be developed and can be used as general rejuvenating tonic and immunity booster. The importance of this plant from medicinal point of view will lead to it’s over exploitation which will lead to decline in its use. As the plant is an endangered one, preservation of the plant in its natural habitat is important that is in–situ conservation. Ex-situ conservation via in vitro propagation also acts as viable alternative form for increase and conservation of population of the plant and to meet the commercial requirements.
ISOLATION IDENTIFICATION AND DETERMINATION OF ANTIFUNGAL ACTIVITY OF CITRAL FROM LEMON GRASS OIL

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Abstract

The herbal medicine was based upon the premise that plants contain natural substances that can promote health and alleviate illness. The plant Cymbopogon citratus belong to the family graminae commonly known as lemon grass oil. It contains 0.26-0.52% essential oil containing 78-85.5% were dry material yield .4% essential oil containing 72-73% citral. The lemon grass oil was taken for the isolation of citral, purity of citral isolated and the antifungal made on it the isolation of citral from lemon grass oil was carried out by means of solvent extraction. The analytical study of determining purity of citral was carried by conducting a carolimertic determination using barbituric acid and λ max. The project emphasis on comparision of antifungal activities on Candida albicans and Aspergillus niger by using microbiological assay method. The result showed that the citral lotion was good antifungal agent against Candida albicans and Aspergillus niger.

Keywords: Antifungal, Citral, Graminae
STUDY CONDUCTED ON THE PLANT- SYZYGIUM CUMINI

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Abstract

The plant Syzygium cumini is found to have a wide variety of therapeutic activities. It is used in health care system for both human and animal uses. Syzygium cumini is an evergreen tropical tree belongs to family Myrtaceae. The purpose of the present study is to prepare a review on the studies conducted on Syzygium cumini. Some of the main studies carried out are; Syzygium cumini reduces the radiation-induced DNA damage in blood lymphocytes, Antiglycation and Antioxidant activities of a ready to serve drink of the plant bark extract, Anti-diabetic activity, Pharmacognostic studies, Anti-inflammatory activity and the traditional and medicinal uses of Syzygium cumini, Combined effects of Syzygium cumini seed kernel extract with oral hypoglycemic in diabetic patients, Diuretic activity of different extracts of bark of Syzygium cumini.

On reviewing the articles and journals it was found that SC is a plant which has a wide variety of traditional uses and many of them are scientifically proven

Keywords: Syzygium cumini, Review articles, Anti diabetic activity, Nutraceutical, Traditional uses, Diuretic property.
ANTIOXIDANT ACTIVITY STUDIES ON AQUEOUS EXTRACT OF IPOMOEA SEPIARIA

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Abstract

Antioxidants are vital substances which possess the ability to protect the body from damage caused by free radical induced oxidative stress. Oxidative stress causes various disease conditions such as ageing, anaemia, arthritis, asthma, inflammation, ischemia, parkinson's disease and perhaps dementia. Ipomoea sepiaria commonly known as Lakshmana or Tiruthali of the genus Ipomoea belonging to family Convolvulaceae, is a glabrous, hirsute, slender twinner with a slightly thickened or tuberous perennial root with a short stem and available throughout India mainly in the plains or near water margins. In the present study, antioxidant property of whole plant of Ipomoea sepiaria was carried out. The aqueous extract of the whole plant was subjected to preliminary phytochemical investigations and revealed the presence of steroids, flavonoids, glycosides and carbohydrates. The aqueous extract was then subjected to invitro antioxidant studies by hydroxyl radical scavenging activity. The aqueous extract scavenge hydroxyl radicals and exert protective effect against oxidative stress. The aqueous extract was found to be an effective antioxidant at concentration of 50 microgram.

Keywords: Antioxidants, oxidative stress
ANTIMICROBIAL ACTIVITY OF ALLICIN

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Abstract
Garlic is one of the earliest well known medicinal plants, which is used to cure different diseases in human beings. It is used to fight infections, prevent cancer, antidiabetic, hepatoprotective, antihelmentics, antioxidant and wound healing. Based on the above importance of garlic, this study was conducted to investigate the antimicrobial activity of the extracts(aqueous, ethanol, acetone) of *Allium sativum* of *Liliaceae* family against bacterial strains. Allicin, the active principle present in *Allium sativum* was responsible for the antimicrobial activity. The antimicrobial activity was tested against gram positive *Bacillus subtilis* and gram negative *E.coli* bacterial strains by using agar well diffusion method. The maximum zone of inhibitions observed against Bacillus subtilis with combination (32mm), aqueous (30mm), ethanol (26mm), and acetone (22mm) extracts, respectively. Minimum inhibition zone was observed in all extracts against gram negative bacteria(*E.coli*) with combination (21mm), aqueous (16mm), ethanol (14mm), and acetone (12mm). The results showed that *B.subtilis* is more susceptible to garlic extracts as compared to *E.coli*.

Keywords: *Allium sativum*, Allicin, well diffusion method, antimicrobial activity, zone of inhibitions
A REVIEW ON USES OF EXTRACTS OF GARCINIA AND ITS PRINCIPAL COMPONENT HYDROXY CITRIC ACID.

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Abstract

Hydroxycitric acid is the principle constituent of Garcinia species including *G. cambogia*, *G.indica*, *G.cowa*. About 50-60% of hydroxycitric acid is present in Garcinia cambogia, and it varies in different types of extracts. It’s a derivative of citric acid responsible for a myriad of health effects including weight loss (tablets for weight loss are available), antifungal, antiaging, antidiabetic effects (rinds of fruit), antineoplastic & chemo preventive effects (leaves of plant). Garcinia is a natural antacid, the preparation of its rind, yogurt and its salt are used to relieve gastric ulcerations & burning sensation. Different types of products containing *Garcinia* is available in the market including tablets, capsules, chewing gums and soft drinks. Validated methods are available for estimation of hydroxyl citric acid by HPLC, HPTLC and UV spectrophotometric methods.

**Keywords:** Garcinia cambogia, hydroxy-citric acid
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CHICKEN FAT: IN VITRO ANTI-INFLAMMATORY AND ANTIBACTERIAL ACTIVITY

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Abstract

Chicken fat, also known as schmaltz, is a light yellow colored substance extracted during the processing of chicken. The use of chicken fat as an immediate treatment for minor kitchen burns was a traditional home remedy employed by the older generations in Kerala and still prevailing in most of the households. A lack of scientifically supported evidences for its healing properties made us to investigate the anti-inflammatory and anti-bacterial activity of isolated chicken fat by in vitro screening methods. Fatty acid profile analysis was done by GC-MS method and this showed the presence of eleven polyunsaturated fatty acids, the major ones being oleic acid (53.8%) and palmitic acid (24.7%). During a primary or secondary burn, the epidermal and dermal layers of skin are damaged which leads to inflammation and infection by bacteria. The major causative factor of inflammation in the body is protein denaturation. The studies on PUFAs have proved their role in skin protection unequivocally. Thus, the anti-inflammatory activity of chicken fat was conducted by albumin denaturation using modified Biuret test. Due to the traditional evidences on healing of burns, the chicken fat was also tested for anti-bacterial activity by cup plate method.
EVALUATION OF EFFECT OF NERIUM OLEANDER IN DIABETIC NEUROPATHY

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Abstract

Present investigation evaluates the effect of hydro alcoholic extract of Nerium oleander (NO) in the management of diabetic neuropathy. Diabetic neuropathy was induced by streptozotocin (STZ) [60 mg/kg, i.p.]. Confirmation of neuropathy various parameters like glucose level, analgesic response, muscle coordination, and intestinal transit were checked. Loss of muscle coordination were checked by rata road apparatus and Swimming Endurance Test, whereas declination of analgesic response was done by tail flick response and writhing reflex. There was significant (p<0.01) improvement in Analgesic response like as well as muscle coordination response was observed in the rats treated with the Hydro ethanoilc extract of NO compared to negative control group. The given study concluded that by improving the analgesic response, muscle coordination and intestinal transit NO is beneficial for the management of DN.
ANTISENSE: A SENSIBLE APPROACH

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Abstract

Antisense therapy is emerging as a possible treatment for diseases of genetic origin or infections. Along with restricting the formation of mutant proteins they can also restore the normal proteins through interference with pre mRNA splicing. When the genetic sequence of a particular gene is known to be causative of a particular disease, it is possible to synthesize a strand of nucleic acid that will bind to the messenger RNA produced by that gene and inactivate it, effectively switching that gene "off". Antisense drugs are a breakthrough in treatment of rare diseases like alports syndrome, familial chylomicronemia syndrome, cancers including lung cancer, colorectal carcinoma, pancreatic carcinoma, malignant glioma and malignant melanoma, diseases such as diabetes, Duchenne muscular dystrophy, asthma and arthritis with an inflammatory component. Clinical trials in the field of antisense drugs are rapidly progressing as ATL1103 for acromegaly and apatorsen for cancer are currently in phase 2 clinical trials. Some of the US FDA approved antisense drugs like Spinraza, kynamro, and alicaforsen IONIS-HTT for treatment of Huntington’s disease are currently marketed.

The purpose of this review is to draw more attention to the area of research for using antisense drugs for therapeutic purposes. Thus antisense technology has progressed rapidly over recent years and it is likely that the antisense drugs will be a part of pharmacopoeia in the future.
EVALUATION OF ANTI-ULCER ACTIVITY OF THE LEAF EXTRACT OF OSYRIS QUADRIPARTITA.

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Abstract

Osyris quadripartita (OQ) has been used to treat peptic ulcer disease in Indian and African folk medicine, but its efficacy has not been validated. The present study was therefore carried out to evaluate the anti-ulcer activity of 80% methanol leaf extract of OQ in rats. Acute toxicity study was carried out using the limit test dose of 2000 mg/kg. The effect of OQ extract on gastric ulcer in rats in pylorus ligation-induced models was studied using single dosing (100, 200, 400 mg/kg) and repeated dosing (200 mg/kg for 10 and 20 days) approaches. Ranitidine (50 mg/kg) and sucralfate (100 mg/kg) were used as the standard drugs. The parameters detected were volume and pH of gastric fluid, total acidity, ulcer score, percent inhibition of ulcer score, ulcer index as well as percent inhibition of ulcer index. Data were analyzed using one-way analysis of variance followed by Tukey’s post hoc test, and P<0.05 was considered as statistically significant. OQ significantly (P<0.001) reduced gastric ulcer index by 55.82% and 62.11%, in pylorus ligation-induced ulcer models at the 400 mg/kg dose, which is comparable to the standard drugs. Ten and twenty days pre-treatment with OQ200 exhibited significant (P<0.001) ulcer inhibition by 66.48% and 68.36%. The findings of this study confirmed that OQ has anti-ulcer pharmacologic activity due to one or more of the secondary metabolites present in it. Therefore, this study validates its anti-ulcer use in Indian folk medicine. Further investigations on isolation of specific phytochemicals and elucidating mechanisms of action are needed.

Keywords: anti-ulcer activity, in vivo, Osyris quadripartita
EVALUATION OF ANTI-CANCER ACTIVITY OF n-HEXANE FRACTION OF AQUEOUS EXTRACT OF *Nigella sativa* L. ON HT29 HUMAN COLORECTAL CANCER CELL LINE.

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Abstract

As the conventional cancer therapies failed to completely fulfill the criteria for a successful cancer therapy, the use of naturally developed anticancer agents has evolved as an alternative safe, low-cost and convenient one. Present study is focused on the evaluation of anticancer activity of the n-hexane fraction of aqueous extract of *Nigella sativa* L. on HT29 human colorectal cancer cell line. The study was facilitated by collecting the seeds of *Nigella sativa* and subjected to decoction with distilled water, and the prepared aqueous extract was fractionated with n-hexane. The anticancer activity of the extract against HT29 cell line was examined by MTT assay. The different concentrations (6.25, 12.5, 25, 50 and 100 µg/ml) was tested at an optical density of 540nm was used to calculate the percentage of cell viability. 100% viability was seen against control. The maximum inhibitory activity was seen in lower concentration 6.25 µg/ml (63.83%) at an optical density of 0.2902 was observed. The minimum percentage of viability (31.91%) was seen at an optical density of 0.1451 was observed in 100 µg/ml. The LD50 value of the extract was found to be 10.3561 µg/ml. The study confirms that the n-Hexane fraction of aqueous extract of *N. sativa* have pronounced anticancer potential against HT29 cell lines. The plant was found to have good anticancer activity, hence by suitable methods, the active constituents can be isolated and studied for various medicinal and biological activities. The results will be promising to the medicinal and pharmaceutical field.
ANTIBODY BASED THERAPY: A BREAK THROUGH.

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Abstract

Immunotherapy has proven its potential in the growing field of pharmaceutical development. Chemically modified antibodies have shown clinical benefit against brain disorders, multiple sclerosis, cancer and even few genetic disorders.

Inherited genetic disorders like retinitis pigmentosa, Bilateral frontoparietal polymicrogyria (BFPP) and nephrogenic diabetics are caused by mutation in G-protein coupled receptors (GPCR) which causes endocytosis of receptor. Modified antibodies acts selectively by preventing various mutations or its expressions. This designer proteins provides better prognosis and can result in designing a novel class of efficacious and safe biopharmaceutical products.

Keywords: Modified antibodies, GPCR mutation
Abstract

Strychnos is one of the largest genera that comprises of approximately 200 known species and among that 44 species are endemic to Asia. Strychnos colubrina Linn belongs to the family Loganiaceae is widely distributed in Kerala. It is one of the important medicinal plants of tribes. The plant is mainly used for the treatment of Snake bite, dyspepsia, malaria, intermittent fevers, swellings in chicken pox, joint pain, Diarrhoea, tumor, Febrifuge, Intermittent fever, dyspepsia etc. The successive extractions were carried out on the areal parts of plant using pet. ether, chloroform, methanol and water. In-vitro anti-inflammatory activity of Strychnos Colubrina Linn was carried out by HRBC membrane stabilization method. The quantitative estimation of these compounds was done by GC-MS study revealed the presence of important constituents present in the extract. The in vitro anti-inflammatory activity was also carried out using the chloroform extract that revealed a potent anti-inflammatory effect of the extract. The phytochemical analysis showed that it contains sterols, flavonoid, tannins, glycosides etc. The present study found that sterols & flavonoids are responsible for the anti-inflammatory activity of strychnos colubrina Linn.

Keywords: Strychnos, extraction, Phytochemical, GC-MS
A REVIEW ON BATTEN DISEASE

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Abstract

Batten Disease also known as Neuronal ceroid lipofuscinoses (NCL) are the commonest Neurodegenerative disorders (NDDs). These are group of disorders with the gradual destruction of neurons resulting in the functional loss of human body. The number of neurodegenerative disorders is increasing day-by-day. Batten disease is an extremely rare and fatal autosomal recessive neurodegenerative disorder that begins in the current childhood. It is the most common form of a group of disorders called the neuronal ceroid lipofuscinoses. They are characterized by the accumulation of autofluorescent storage material in many cell types. The NDDs were the least occurring disease in the previous centuries. The lifestyle modification, stress, environmental causes etc, have enhanced the occurrence of NDDs in the current century. During the last century, many studies have demonstrated that proteins with altered physiochemical properties are deposited in brain in NDDs. The present study involves a review on the batten disease. The review includes the study of ethiology, signs and symptoms, pathogenesis, diagnostic methods and available treatment measure. The study revealed that no efficient treatment is available for the disease. But clinical trials are going on in search of a medication.

Keywords: Batten, neurodegenerative, lipofuscin, autosomal
ANTIOXIDANT SCREENING OF STRYCHNOUS COLUBRINA LINN EXTRACTS

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Abstract

Medicinal plants are the most precious gift to mankind offered by nature. For most of the known health issues there is a natural plant remedy. But most of these plants are not properly exploited. The present study deals with the scientific study of the therapeutic use of a medicinal plant *Strychnos colubrina Linn*. The plant is traditionally used by the tribe for skin cancer and infections. The present study consists of invitro screening of antioxidant activity of *Strychnos colubrina Linn* extract. The antioxidant activity of extract was screened by six different methods that include H2O2, superoxide, hydroxyl radical and NO scavenging assays, Reducing power assay and DPPH assay. These studies were shown that the extract is having antioxidant efficacy.

Keywords : *Strychnos colubrina*, antioxidant, DPPH assay
EVALUATION OF ANTIPYRETIC ACTIVITY OF *Anogeissus latifolia* BARK IN BREWER’S YEAST INDUCED PYREXIA RAT MODEL

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Abstract

*Anogeissus latifolia* (Combretaceae) is commonly used in the traditional system of medicine for the treatment of inflammation, pain, jaundice, snake bite, wounds. Traditionally used medicinal plants for the treatment of inflammation generally possess fever reduction property. The preliminary phytochemical analysis was performed on Aqueous Extract of *Anogeissus latifolia* Bark (AEALB) which indicated many bioactive phytoconstituents. To assess antipyretic activity, Pyrexia was induced by subcutaneous injection of 10 ml/kg of 15% w/v Brewer’s yeast suspension below the nape of the neck. The rectal temperature of each rat was measured at time, 0 h, using a rectal thermometer and before injection of the yeast. After 18 h following yeast injection, different groups were treated orally with the vehicle, AEALB (100 and 200 mg/kg) and paracetamol (150 mg/kg). The rectal temperature was then recorded over a period of 6 h. AEALB 100 mg/kg produced significant (p <0.05, p < 0.01 and p < 0.001) antipyretic activity from the 4th to 6th h. But, AEALB 200 mg/kg produced significant (p <0.05) antipyretic activity on 5th and 6th h only. Aqueous extract of *Anogeissus latifolia* bark was found to possess significant antipyretic activity in Brewer’s yeast induced pyrexia rat model and AEALB 100 mg/kg has higher anti-pyretic activity than AEALB 200 mg/kg dose level.

Keywords: *Anogeissus latifolia*, Antipyretic activity, Brewer’s yeast
The oceans cover about three fourth of the earth’s surface and contains millions of hidden treasures. Seaweeds and marine algae with their diverse bioactive compounds have opened up potential opportunities in pharmaceutical and agri-food processing industries. The present study design was to evaluate the preliminary phytochemical nature and antibacterial potential of green algae *Ulva lactuca*. Preliminary studies indicated the presence of flavonoids, alkaloids, steroids, carbohydrates, saponins, tannins, proteins and phenols in various extracts of *Ulva lactuca*. The methanolic extract fraction showed higher bioactive components compared to the chloroform extract. Antibacterial activity was prominent with the methanolic fraction than the chloroform fraction exhibiting good zone of inhibition against four human pathogenic bacteria (ZI=23). The chloroform extract showed only moderate activity compared with the standard drug ampicillin (ZI=25). Our current results indicate that the various bioactive constituents detected in the algae maybe responsible for its antibacterial effect. Thus, we can safely say that *U lactuca* may be a potential candidate for development of future antibacterial compounds. However, still further studies and standardization of algal research may be required to develop them as medicines.

**Keywords:** Antibacterial activity; phytochemical study; *Ulva lactuca*
ANTIOXIDANT SCREENING OF STRYCHNOUS COLUBRINA LINN EXTRACTS

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Abstract

Medicinal plants are the most precious gift to mankind offered by nature. For most of the known health issues there is a natural plant remedy. But most of these plants are not properly exploited. The present study deals with the scientific study of the therapeutic use of a medicinal plant Strychnos colubrina Linn. The plant is traditionally used by the tribe for skin cancer and infections. The present study consists of invitro screening of antioxidant activity of Strychnos colubrina Linn extract. The antioxidant activity of extract was screened by six different methods that include H2O2, superoxide, hydroxyl radical and NO scavenging assays, Reducing power assay and DPPH assay. These studies were shown that the extract is having antioxidant efficacy.

Key words: Strychnos colubrina, antioxidant, DPPH assay
A REVIEW OF STUDIES CONDUCTED ON PLANTS EXPLORED FOR THE TREATMENT OF ULCERATIVE COLITIS

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Abstract

The use of herbal therapy in inflammatory bowel disease (IBD) is increasing worldwide. The aim of this study was to review the literature on the efficacy of herbal therapy in IBD patients. Studies on herbal therapy for IBD published in Medline and Embase were reviewed, and response to treatment and remission rates were recorded. From the studies, it can be assumed that the efficiency of herbal therapies in IBD is promising. The most important clinical trials conducted so far refer to the use of mastic gum, tormentil extracts, wormwood herb, aloe vera, Triticum aestivum, germinated barley food stuff and Boswellia serrata. In ulcerative colitis, aloe vera gel, Triticum aestivum, Andrographis paniculata extract and topical Xilei-San were superior to placebo in inducing remission or clinical response, and curcumin was superior to placebo in maintaining remission; Boswellia serrata gum resin and Plantago ovata seeds were as effective as mesalazine, whereas Oenothera biennis had similar relapse rates as ω-3 fatty acid in the treatment of ulcerative colitis. In Crohn’s disease mastic gum, Artemisia absinthium and Tripterygium wilfordii were superior to placebo in inducing remission and preventing clinical post-operative recurrence, respectively. Herbal therapies exert their therapeutic benefit by different mechanisms including immune regulation, antioxidant activity, inhibition of leukotriene B4 and nuclear factor-kappa B, and antiplatelet activity.

Keywords: Alternative medicine, inflammatory bowel disease, herbal medicine, Crohn's disease, ulcerative colitis.
National Seminar on Drug Design and Optimisation of Drug Delivery Systems

November 9, 2017

NIRMALA COLLEGE OF PHARMACY

Muvattupuzha, Kerala
GENERAL PERCEPTION OF ANTIBIOTICS IN PUBLIC

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Abstract

Healthcare professionals should have a responsibility of creating a safe medication environment and reducing risk to a vulnerable population. Quality of life can be improved by enhancing standards of medical treatment at all levels of the health care delivery system. The Lack of education and ignorance which may lead to resistance development and taking antibiotics without prescription etc. can be used as a tool to develop an area of patient counselling in all places where dispensing of drugs is been done.

The current survey indicated the involvement of 300 people a total of public and students. The results indicated the involvement of 150 students out of which, 10% were male and the rest were female (90%). Where as in the public sector, the male populations contribution increased to 25% and female went down to 75%.

The study ended by stating the requirement of patient counselling department or a counselling given from the counter regarding the safe and effective use of antibiotics need to be implemented.

KEY WORDS: Antibiotics; Antibiotic resistance; Survey; Antibiotic usage.
A STUDY ON DEPRESSION AMONG PATIENTS WITH ACUTE CORONARY SYNDROME (ACS): A SINGLE CENTRE EXPERIENCE

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Abstract

Background: Acute Coronary Syndrome (ACS) is a major health problem which is associated with high mortality and morbidity. Depression is one of the major psychological symptoms among patients with Acute Coronary Syndrome (ACS) but may remain under diagnosed and undertreated. Studies in this field are not adequate so it was decided to perform a study on measuring the frequency of depressive symptoms among patients with Acute Coronary Syndrome and different factors associated with it.

Methodology: A prospective observational study was carried out for a period of one year in cardiac department of the hospital. Total 400 patients with Acute Coronary Syndrome (ACS) selected for the study. Patient’s socio demographic factors, duration since diagnosis, co morbidities associated with Acute Coronary Syndrome and intervention at the time of diagnosis were collected from the patient medical records and interview methods. Hamilton Depression Rating scale (HAM –D) questionnaire was administered to assess the depressive symptom among patients with ACS.

Results: Of the 400 ACS patients 65.5% were male and 34.5% were females. Mean age of the male and female were 63.67±10.62 and 66.71±8.98 respectively. A large prevalence of ACS was found in the age group 61-70 years. Our result indicates that, the factors like type of living and intervention at the time of diagnosis were significantly associated with gender. The large proportions of ACS patients were under depressive symptoms. ACS more commonly associated with male patients whereas the depressive symptoms more predominant in women. The study revealed that, Depressive symptoms significantly correlated with age, gender, duration since diagnosis and the number of co morbidities associated with ACS. Simple linear regression analysis showed that, age and duration since diagnosis had a strong positive correlation with depression severity.

Conclusion: It can be concluded that, large proportion of ACS patients were under depressive symptoms. Hence, it is advisable for the proper screening of depression in this population for earlier intervention especially patients who already presented with multiple risk factors.
EVALUATION OF PRACTICING PHARMACY TO THAT OF THEORETICAL IDEAL PHARMACY

Nirmala College of Pharmacy, Muvattupuzha

Abstract

The health of the public is fundamental to the happiness and welfare of the people. The barrier of good health include poor access to quality medical products, lack of access to trained health professionals and care, inadequate health, workforce, unaffordable cost of care and poor standards of education of healthcare professionals.

The mission of pharmacy practice is to contribute to health improvement and to help patients with the health problems to make the best use of medicines.

There are six components to this mission, Being readily available to patients, Triaging health related problems, Health promotion, Assuring effectiveness to medicines, Preventing harm from medicines, Making responsible use of limited health care resources.

Need for the Study: The current study was undertaken because there are various myths related to the community pharmacy relating to, Non availability of pharmacist, Improper storage of drugs, Unethical dispensing of drugs, Inadequate working space etc. so this study will address all such areas and come out with the current situation existing in Muvattupuzha town in Kerala and which will be compared to the theoretical knowledge obtained during study.

Conclusion: on the basis of the data generated by following the inclusion and exclusion criteria and based on survey done on 10 pharmacy shops the ongoing process was evaluated. Based on results we could state that the number of pharmacist working were low as compared to standard requirements. But the working environment was satisfactory with respect to the pharmacist. The non-availability of an private counselling area was a major concern during the study.
Abstract

Rationale on selecting this topic: This presentation is about the fascinating revolutionary practice done recently about the SIBO (small intestinal bacterial overgrowth). It is the recent development which have been not known by many of the people in the world, because there are no available data’s about SIBO in the medical science books. This presentation is based on new insights of SIBO, the various tests done for SIBO, the new natural treatment protocol diet and supplements for SIBO.

Hypothesis: The unknown causes for IBS and Crohn’s disease have been found in the recent days. IBS is a long term or recurrent disorder of gastrointestinal functioning. Its symptoms include: abdominal pain, bloating, change in bowel habits (diarrhea/constipation). Crohn’s disease is a lifelong IBS of the digestive tract. Its symptoms are as same as the IBS. Researches states that the main causes for IBS and the Crohn’s disease is SIBO. Its mechanism involves as follows: Food poisoning by bacteria leads to release of bacterial toxin which results in gut nerve damage and that causes IBS and crohn’s disease; all of these will ultimately cause SIBO. Causes of the symptoms include: Damage to microvilli, deconjugation of bile acids.

Methodology: Various tests done for SIBO: Hydrogen breath test, Lactulose breathe test, Quinton hydrogen breath tracker machine etc.

Conclusion: By knowing more on SIBO, we can treat the patients who have digestive disorders or deficiencies, parasitic attacks and treatment for Candida, which are not known by most of the people.
INBORN ERRORS OF METABOLISM

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Abstract

Inherited metabolic disorders are a heterogeneous group of genetic conditions mostly occurring in childhood. Inborn errors of metabolism are individually rare, but collectively they are responsible for significant levels of morbidity and mortality among pediatric population. To date, more than 1000 different inborn errors of metabolism have been identified. While individually rare, the cumulative incidence has been shown to be upwards of 1 in 800. They result from the lack of activity of one or more specific enzymes or defects in the transportation of proteins. Pediatricians and neonatologists play a vital role in identifying which patients need to be investigated. Recent advances in the diagnosis and treatment of these disorders have substantially improved the prognosis for many of them. Most affected babies, however, appear normal at birth and subsequently deteriorate, with hypoglycemia, acidosis, neurological or cardiac problems, or liver disease. The diagnosis of an inborn error of metabolism often needs to be established quickly in order to prevent death or permanent neurological sequelae. The present review provides a platform for discussion of causes and risk factors in neonates in whom an inborn error may be present and in brief the management strategies.
KNOWLEDGE, ATTITUDE AND PRACTICE OF HOSPITAL/COMMUNITY PHARMACISTS TOWARDS PHARMACOVIGILANCE PROGRAMME: INDIAN SCENARIO

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Nirmala College of Pharmacy, Muvattupuzha, Kerala

Abstract

Background: Pharmacovigilance (PV) is the specialised area for assessing the adverse drug reactions and the involvement of community/hospital pharmacists in the pharmacovigilance programme is negligible.

Aim: The aim of this study was to assess the knowledge, attitude and practice of hospital or community pharmacists regarding pharmacovigilance and to identify the barriers for under-reporting.

Methodology: This was a prospective observational survey based study. The study extended over a period of one year. A self-administered 12 item questionnaire was prepared and a total of 20 pharmacies were selected and the pharmacists who were regularly involved in drug dispensing and have a direct contact with the patients only selected for the survey.

Results: When their knowledge, attitude and practice were analysed, 90% of subjects were aware of pharmacovigilance but only 55% had knowledge about the procedures for reporting adverse drug reaction (ADR). Even though all of them aware that PV is necessary for better patient care, 95% of them only felt that ADR reporting is the responsibility of the pharmacist. There were many discouraging factors for ADR reporting, major barrier was lack of time (40%), and the lack of knowledge about the procedure for reporting (20%).

Conclusion: The study about the knowledge, attitude and practice of pharmacist towards pharmacovigilance showed that majority of the pharmacists had good knowledge about PV and understood the need for reporting ADR. More researches have to be done to focus the challenges/barriers of ADR reporting and methods to overcome the same in Indian setting.
A REVIEW ON REFSUM DISEASE

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Abstract
Autosomal recessive disorders are genetic disorders which may run in families. The early diagnosis, treatment or prevention is essential for retarding the disease progression and in its proper management. The present study aims to provide a general awareness regarding a rare auto recessive disorder named Refsum disease. It is an inborn autosomal recessive disorder characterized by hereditary motor sensory neuropathy. The signs and symptoms develop progressively and slowly with neurologic and ophthalmic manifestations. It may occur at any time from early childhood until around 50 years of age.

Pertinent physical findings include neurologic, ophthalmic, cardiac, and skin defects. The neurologic and ophthalmic symptoms include Partial intermittent sensorimotor polyneuropathy, Retinitis pigmentosa, Anosmia sensorineural deafness, cerebellar ataxia, Cardiomyopathy with a serious conduction defect is a life-threatening sign.

Diagnosis can be done by analysis of phytanic acid concentration in plasma or serum and then either molecular genetic testing or enzyme analysis. Skeletal radiography is used to estimate bone changes. Restriction of diet reduces plasma and tissue levels of phytanic acid.

The study provides a beneficial knowledge about the signs and symptoms, etiology, pathophysiology, diagnosis and management of Refsum disease. It will help for the early detection and proper management of the condition.

Keywords: Refsum disease, Phytanic acid, Retininis pigmentosa, ataxia
Abstract

The burden of non-communicable disease (NCD) is increasing in India, and the rise in its prevalence contributes to the development of type 2 diabetes mellitus, obesity, hypertension, and hyperlipidemia. The assessment of diet and nutritional status of urban population of India, by National Institute of Nutrition during 2015-2016, pointed out that the change in food habits, sedentary lifestyle, lack of exercise etc contributed to its rising prevalence. Puducherry attains to the top of the list of States with the highest prevalence of diabetes, and Kerala has highest prevalence of hypertension as well as high cholesterol in urban women. Study conducted by Sree Chithra Tirunal Institute of Medical Science and Technology on prevalence of non-communicable across Kerala revealed that one out three adults above 18 years had hypertension and one out of five had diabetes. Among adult in the age group of 45-69 years, over two-third of the population (67.7%) had diabetes or were in pre diabetes stage. The modifiable risk factors of cardiac disease in Kerala include consumption of alcohol, unhealthy diet, sedentary lifestyle and air-pollution etc. Tamil Nadu, Karnataka, Andhra Pradesh and Kerala were among the top six States which had the most tobacco users among urban men. The prevalence of risk factors is high in rural Kerala, showing diabetes-20%, high blood pressure- 42%, high cholesterol-72%, smoking (42% in men) and obesity-40%, physical inactivity -41%, unhealthy alcohol consumption 13%. The Nallampatti (Tamil Nadu) non-communicable disease study showed a very high prevalence of NCD in a rural South Indian population, much higher than the ICMR-INDIAB study. This calls for urgent strategies from both governmental and private health-care organizations to step up and reduce the risk factors for cardiovascular disease in rural India.

Keywords: Non-communicable diseases, prevalence, diabetes, hypertension
NOVEL DIAGNOSTIC APPROACHES FOR TIMELY DETECTION OF UROPATHOGENS

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Abstract
Urinary tract infections are one of the most prevalent infections in both community and hospital settings. The emergence of multi-drug resistant pathogens are intensifying the burden of illness and necessitating the timely diagnosis for rational use of antibiotics. Both phenotypic and genotypic antibiotic susceptibility tests are used to identify the pathogen but the conventional methods takes around 1-2 days for a reliable result. So newer methods been developed in recent years to decrease the detection times. Digital LAMP quantification (dLAMP) and direct single cell imaging are the novel screening methods for the identification of uropathogens. The result will be produced within 30 minutes, which will be helpful for personalising the treatment. dLAMP is the Loop-mediated isothermal amplification (LAMP), which is a highly sensitive single-molecule DNA amplification and quantification technique, to directly count bacterial genomes in urine samples. Through this technique, a species-specific bacterial DNA sequence from 51 urine samples infected with Escherichia coli and susceptible or resistant to ciprofloxacin or nitrofurantoin was identified. For direct single cell imaging, bacterial cells are obtained using micro fluidic chip and their growth rate will be monitored using individual microscopic screening. By this method it is possible to determine the urinary tract infection caused by resistant bacteria even if the bacterial concentration in the urine is very low. These advancements in diagnostic technology permit the development of point-of-care test that can guide correct treatment of urinary tract infection. In addition to the personalised treatment approach in clinical setting, these novel diagnostic tools can be applied for epidemiological surveillance, infection control, antimicrobial stewardship etc.

Keywords: Uropathogens, dLAMP, single cell imaging
ANTI PD-1 COMBINATION THERAPY – A WAY FORWARD

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Abstract

An integral function of the immune system is its ability to differentiate between the normal cells of the body from the foreign particle. This property causes the immune system to attack the foreign cells invading the body. To function in this way, our immune system uses ‘check points’. PD-1 is a check point protein on T-cell that functions as an ‘off switch’ that stops the cells from attacking other cells in the body. Programmed cell death-1 (PD-1) is a member of the CD28 superfamily that delivers negative signals upon interaction with its two ligands such as PD-L1 or PD-L2. It is only able to function if it is attached to programmed death-ligand (PD-L1). PD-1 and its ligands are also involved in attenuating infectious immunity and tumor immunity, and facilitating chronic infection and tumor progression.

Immune checkpoint inhibitors against PD-1 or PD-L1 are a standard pharmacological therapy in patients with cancer. In some cancers, the cancer cells have substantial amounts of PD-L1 to help them evade immune attack. Immunotherapy drugs can target either PD-1 or PD-L1 and increase the immune response against cancer cells. Copious amounts of researches and trials are being held and anti-PD-1 combination therapy is found to be an innovation in the field of cancer research. Radiotherapy combined with immunotherapy is more effective than monotherapy alone. The PD-L1 expression is up regulated on tumour cells after radiotherapy, resulting in the synergistically enhanced antitumor effect of irradiation and PD-L1 blockade.
UNMET NEEDS FOR INFORMATION AND SUPPORT TO PROVIDE OPTIMUM THERAPYaddressed through patient counselling at Nirmala Medical Center, Muvattupuzha.

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Abstract

Patient counselling by pharmacist is a diverse activity. To attain assurance that the patient understands the therapy is critical and requires this acquired skill. It is attaining prominence as part of extended role which is seen as the way forward for the profession. In this study, outpatients coming to Nirmala medical centre were counselled using appropriate counselling tools to identify and prevent undesirable effects in patients. Counselling service bought into light the importance of a clinical pharmacist in the hospital setting through the recommendations and interventions provided in promoting appropriate use of medications. The interventions were done with respect to drug related problems, pharmaco-economic issues and medication adherence. The drug related problems mainly include improper drug selection, Untreated indication, sub-therapeutic dose, Overdose, ADR, failure to receive drugs, drug interaction and drug use without indication. Based on the study, we found that drug interaction (27.58%), among that drug-drug interaction (22.4%), drug -food interaction (5.17%), dispensing error (25.86%), wrong dose (18.96%), ADR (13.79%), Rx not given (6.89%), omission (3.44%), no indication (1.72%), illegible Rx (1.72%) were reported. Adequate intervention were done to solve the drug therapy problems by collaborating with other health care professionals in the health care team. The services provided at the centre were appreciated based on interventions done for the patients. Pharmacists being the last health care professionals to come in contact with the patient before taking the medication, They are the best individuals for assuring safe and effective therapy.

Keywords: Patient counselling, medication adherence.
TEZEPELUMAB MOVING UPSTREAM - PROMISING DRUG FOR PERSISTENT UNCONTROLLED ASTHMA

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Abstract

Asthma is a chronic condition characterized by inflammation of the airways and recurrent attacks of breathlessness and wheezing. Asthma becomes severe when it cannot be controlled by high dose therapy with inhaled/ oral corticosteroids and long acting inhaled beta 2 agonists. Inadequate control of asthma continuous to be a serious problem, despite advances in our understanding of the inflammatory process of asthma and a growing arena of disease management guidelines. Patients with uncontrolled asthma often have limited therapeutic options and remain at a high risk of morbidity and mortality.

Severe uncontrolled asthma can lead to dependence on oral / inhaled corticosteroids with the systemic steroid exposure potentially leading to serious short term and long term adverse effect including weight gain, diabetes, osteoporosis, glaucoma, cardiovascular disease and immunosuppression. T2 inflammation driven asthma is present in 2/3rd of patients and characterized by elevated T2 markers including eosinophils, serum IgE, FeNO. Conversely 1/3rd of patients with severe asthma do not present with features of activated T2 inflammatory pathway and no biological treatment currently exist for those patients whose non- T2 driven disease is uncontrolled. Tezepelumab, directed antibody to thymic stromal lymphopoietin (TSLP), is an upstream type-2 helper (Th2) immune regulator that, among other actions, attenuates lymphocyte maturation by attenuating activation of antigen presenting cells. Tezepelumab is the first biologic that has a substantial positive effect on two important markers of inflammation of asthma — namely, blood-eosinophil levels and the the fraction of exhaled nitric oxide (FENO). This review emphasizes on the mechanism of susceptibility to asthma exacerbation and detailing of the promising future of uncontrolled asthma.
“BETTER QUALITY DRUGS” – A COMPARISON BETWEEN GENERIC NAME AND BRAND NAMED DRUGS

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Abstract
To compare and evaluate the quality of “BRANDED” and BRANDED-GENERIC equivalents of some commonly used medicines manufactured by the same pharmaceutical company in India.

Commonly used different classes of drugs like – ARBs, Antacids, PPI, NSAIDs, Drugs for hypertension and dyslipidaemia, oral hypoglycaemic agents….etc. manufactured in BRANDED and BRANDED-GENERIC versions by the same company of India has to be selected. Both quantitative and qualitative analysis has to be performed following the methods prescribed in the Indian Pharmacopoeia. The tests that have to be performed are identification test, chemical composition estimation test, uniformity of contents test, uniformity of weight, dissolution studies, friability, hardness, and disintegration test….etc.

Need for the study: Core theme is to protect the poor patients, give educational awareness to the physician, pharmacist and also to the government to sell the best quality drugs with required therapeutic action to the patients. Because the patients who can’t afford costly drugs or nowadays many of them run behind the cheaper drug (mainly generic drugs are available) but these are of low therapeutic action to the patient. Therefore it is a part of avoiding the irrational usage of drugs.

Conclusion: To provide the best quality of drugs to the patients whether it is branded or generic named drugs at required therapeutic action.
STUDY OF DRUG SAFETY ALERTS AND ITS APPLICATION IN COMMUNITY PHARMACIES LOCATED IN AND AROUND MUVATTUPUZHA.

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Abstract

Drug safety communication was developed to provide the public with easy access to important drug safety informations. This gives the most informations for health care professionals. FDA uses drug safety communications to let health care providers, patients and consumers know about newly observed potential risks of FDA approved drugs and to offer advice as to how these drugs may best be used in the light of this new information. This study is based on the review of safety alerts from FDA & CDSCO in the year 2016 - 17.

Objective: The objective of this study was to review the most recent drug alerts exhibited by FDA & CDSCO, and analyse the understanding and implementation among community pharmacists of the same and to determine its importance in practice.

Methodology: A review of 30 drug alerts of 2016 -17 by FDA & CDSCO was done. A prospective, observational community based study was conducted by making a self-administered questionnaire available for community pharmacists. The questionnaire consisted of 5 questions that evaluated the awareness, accessibility and importance of safety alerts in practice.

Conclusion: The study result denote that none of the pharmacies have more than two drug information resources. The number of pharmacists aware of drug safety alerts were limited and none of them were aware of FDA and CDSCO alert.
Abstract

Monitoring of blood glucose level is an important aspect of the management of diabetes mellitus. For this purpose, a plethora of biosensors have been developed. The recent advances pertaining to non-invasive methods analysed biological fluids other than blood and interstitial fluid include sweat, breath, saliva, ocular fluid etc. The technology used for non-invasive blood glucose monitoring includes optical, transdermal and thermal techniques. But the major difficulties in the development of non-invasive glucose sensors are associated with the indirect nature of the measurement and the inevitable calibration process. To overcome these challenges, another device called Free Style Libre is developed by Abbott, which does not require finger stick calibration. This is a USFDA approved product partially or fully reimbursed in 16 countries including France and Germany. This device gives a quick one second scan over a small sensor that is worn on the back of the upper arm. Patients wave a reader device over it to see the current blood sugar level and changes over the past eight hours. With the data from the device, users can have a better understanding of their glucose levels through the Ambulatory Glucose Profile (AGP), a chart that provides a visual snapshot of glucose levels, trends and patterns over time. Clinical trials showed that people who use Free Style Libre system test their glucose levels an average of at least 15 times per day. The studies also showed that people who scan more frequently spend less time in hypoglycemia or hyperglycemia while having improved average glucose levels, demonstrating improved glucose control overall.
Abstract

The blood brain barrier poses a problem to deliver drugs for brain malignancies and neurodegenerative disorders. Diseases like Glioblastoma multiforme, Huntington’s disease, Amyotrophic Lateral Sclerosis etc. Are incurable that result in progressive degeneration or death of nerve cells. These disorders share a common pathogenic mechanism involving aggregation and deposition of misfolded proteins, which leads to progressive central nervous system disease. Stem cells such as embryonic stem (ES) cells, progenitor cells, mesenchymal stem cells (MSCs), and induced pluripotent stem (iPS) cells can be used to delivery drugs or RNA to the brain

Treatment objectives of stem cell therapies can be cellular replacement or providing environmental enrichment. Cellular replacement involves the derivation of specific neuronal subtypes lost in disease and subsequent grafting into affected areas of the nervous system. The newly transplanted neurons may then integrate, synapse and recapitulate a neural network similar to the one lost in disease.

Stem cell treatment to deliver drugs to neural tumors is currently in clinical trial. This method could be an advantage because stem cells can cross the BBB into the brain. MSCs are particularly interesting because to date, the experimental and clinical evidence showed ‘no alarm signal’ with regards to safety.

This review discusses the advantages and disadvantages of stem cells to deliver prodrug, genes and RNA to treat neural disorders.
TO COMPARE AND CONTRAST THE QUALITY OF PHARMACEUTICAL SERVICES IN RURAL AND URBAN AREAS IN MUVATTUPUZHA

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Abstract

Healthcare professionals should have proper knowledge and maintain certain standards according to the Pharmacy Act. Knowledge about antibiotics, storage of drugs and prescription terminology is essential to take care the quality of medicines and medication.

Current survey indicates the qualification, experience, knowledge of the pharmacist, also the cleanliness and location of pharmacy.

A predesigned questionnaire was prepared and the data was collected. The collected data was analyzed statistically. From this we came to conclusion that the urban areas were found to be more satisfactory than rural areas.
QUALITY OF LIFE OF INSULIN AND NON INSULIN TREATED DIABETIC PATIENTS

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Abstract

Diabetes mellitus is one of the most common chronic disease in approximately all countries. And its prevalence continues to increase mainly due to changes in life style resulting in physical inactivity and increased obesity.

Diabetes is associated with high risk of some macro and micro vascular complications. As a result this complications cause mortality rate among diabetic patients to be about twice as much as that of non-diabetic individuals of similar age.

Diabetes mellitus is a heterogeneous metabolic disorder characterized by common feature of chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism. Based on pathological state diabetes can be classified in to three they are Prediabetes, Type1 diabetes, Type2 diabetes. Type 1 diabetes mellitus is treated with insulin. Type 2 diabetes is commonly treated with oral hypoglycemic agents.

Need For Study: To assess the quality of life of insulin and non-insulin treated diabetic patient. The quality of life of type 2 diabetic patient can be improved by treating with small dose of insulin along with OHA from the initial stage of diagnosis.

Conclusion: The prime aim of treatment of a disease is to prevent complications and promote good health. Similarly with type 2 diabetes studies states that, quality of life for insulin treated diabetic patient are being expected to be improved. In type 2 diabetes patients with secondary OHA failure therapy with a combination of OHA and insulin and with insulin alone was equally effective and well tolerated however, combination therapy with lower insulin dose reduces the incidence of obesity/weight gain, which is one of the most common complication of diabetes. At present scenario combination therapy is be considered when OHA failure occurs, but if given at initial stage at small dose quality of life and resistance to OHA can be avoided.

Keywords: Type 1 (insulin-dependent diabetes mellitus), Type 2 (Non-insulin-dependent diabetes mellitus)
PREVALENCE OF CANCER BY PESTICIDES AND HORMONES USED IN PINEAPPLE CULTIVATION IN MUVATTUPUZHA

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Abstract

Objective: Vazhakulam lies in the east of Muvattupuzha which is known as the pineapple city due to large scale cultivation of pineapple. It is reported that cancer is prevalent in this community which may be due to the excessive use of hormones and pesticides. To study the prevalence of cancer by using hormones and pesticides in pineapple cultivation.

Content: The study was carried out to assess the relevance of cancer causing hormones & pesticides used for pineapple cultivation. It reveals that a combination of ethyphone, calcium carbonate and urea has been used in farming, deviating from the prescribed pesticide usage. Epidemiologic studies, although sometimes contradictory, have linked phenoxy acid herbicides or contaminants in them with soft tissue sarcoma (STS) and malignant lymphoma; organochlorine insecticides are linked with STS, non-Hodgkin’s lymphoma (NHL) leukaemia and less consistently with cancers of the lung and breast; organo-phosphorous compounds are linked with NHL and leukaemia; and triazine herbicides with ovarian cancer. These are been continuously used in every phase of cultivation.

Besides the effects that it has on human beings, it has also been reported that the aquatic fauna of numerous rivulets, which flow through farmlands, are wiped off as the poisonous runoff gets mixed in the streams.

Conclusion: The data on prevalence of cancer in pineapple cultivation in Muvattupuzha assessment studies may be regarded as an aid towards a better understanding of the problem. To prevent cancer that has been caused due to use of pesticides and hormones in pineapple cultivation can be achieved by taking several protective measures such as wearing mask, gloves should be adopted during the usage of pesticides. Avoid inhabiting especially children in the area where they cultivated. Avoid leakage of components in to water resources. There are some inherent difficulties in fully evaluating the risks to human health due to pesticides. There is a need to convey the message that the over use this kind of agents will cause serious health problems and genetic change.
AN EPIDEMIOLOGICAL SURVEY ON SELF MEDICATION IN MUVATTUPUZHA REGION

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Abstract

The use of medications without prior medical consultation regarding indication, dosage, and duration of treatment is referred to as self-medication. In most illness episodes, self-medication is the first option which makes it a common practice worldwide. Several studies investigating self-medication have revealed the use of sub therapeutic doses and frequent use of antibiotics. Self-medication is influenced by many factors such as education, gender, socioeconomic status and availability of medicine. A study was indicated in Muvattupuzha region in Kerala state to estimate the prevalence of self-medication and it was found that majority of the people were indulge in self-medication. Considering the rising issue of global antibiotics resistance and the documented health issues, the practice of self-medication has a great impact on health of people as it is observed in Muvattupuzha region by this study.

The study was undertaken to evaluate various aspects of self-medication in students (medical and non-medical), youth (men and women), and elderly. A prospective cross sectional, questionnaire based study was carried out among 400 people selected by simple random sampling from January 2017 to October 2017. Subjects who reported self-medication had fever and headache as most frequently reported illness and commonly used drugs included antipyretics and analgesics. They obtained information through advertisements, from previous prescriptions and from experience of oneself, their friends and family. Majority of people were under self-medication. Self-medication rates were highly prevalent, which is quite alarming.