Formulation and in-vitro Evaluation of Vildagliptin Microspheres Using Pectin and Xanthan Gum as Polymers

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Research Article

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Original Article

Nanoparticle Coating Obtained from Agaricus Bisporus On Elastic Ligatures: An *in vitro* Study

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The presence of fixed orthodontic appliance favours the plaque accumulation and a compromise in oral hygiene. There are various methods in practice to minimize the white spot lesions (WSL) incidence, but which depend on the patients' compliance. It is prudent to introduce materials and methods which rely less on patient. The purpose of our study is to introduce a new silver nanoparticle (AgNPs) coating onto elastomeric ligatures and to assess its antimicrobial property and durability of the silver nanoparticles coating on the elastomeric ring. Out of a total sample of 69 clear elastomeric ligatures, 44 of them are equally allocated (n=22) to each of the two groups, Group A-test group (AgNPs coated) and Group-B-control (Non coated) for antimicrobial testing and rest for durability testing. The test group elastomeric modules coated with AgNPs were prepared from *Agaricus bisporus* extract and silver nitrate solution and tested for antimicrobial testing against *Streptococcus mutans*. Remaining test sample was utilised for determination of silver ion release(mg/L) when coated elastomeric rings are placed in artificial saliva and analyzed after T1 - 24 hours, T2 – 48 hours, T3 - 2 weeks, T4 – 4 weeks using atomic absorption spectrophotometer (AAS). The results showed a mean inhibition zone of 2.57 + 0.17 mm for antimicrobial activity for test group which is clinically significant compared to the control group which showed no inhibition zone. Friedman test was used to compare the silver release at 4 different time periods T1, T2, T3, and T4 and Wilcoxon rank test for pairwise comparison. The amount of silver ion accumulation into artificial saliva increased continuously as time elapsed and silver ion release is statistically significant between the measured time points ($p = 0.001$). The AgNPs coated elastomeric modules has definite antimicrobial activity compared non coated elastomeric modules. The durability of the coating was shorter.

Introduction

The orthodontic treatment with fixed appliances is challenging for oral hygiene maintenance as it provides increased surface area for plaque adherence. The orthodontic appliances limit the self-cleansing capacity of saliva leading to high risk of incipient caries and white spot lesions (WSL) on dental surfaces [1]. Fejerskov and Kidd defined WSL as the "first sign of a caries lesion on enamel that is detectable with the naked eye"[2]. While the majority of WSL re-mineralize after the removal of appliances, but pre-treatment levels are never regained and can progress to cavitation [3].

The most important component in preventing WSL is good oral hygiene habits, although these depend totally on patient compliance. Therefore, orthodontic biomaterials that are inherently antibacterial or anti-cariogenic, such as adhesives, ligatures, brackets, etc., are of interest and have been tested [4].

The method of ligating archwires is a supplemental factor accounting to dental biofilm retention [5]. Elastomeric ligatures are synthetic elastics made of polyurethane, lie close to enamel and are changed regularly during orthodontic treatment [6,7]. They could serve as a vehicle for the localised distribution of antibiotics, reducing the need on patient cooperation and also improve enamel remineralisation of areas adjacent to the bracket base, that are difficult to clean [8].

One of the major advents in orthodontics is coating these elastomeric surfaces with Nano Particles to prevent microbial adhesion. Silver nanoparticles (AgNPs) are one of the commonly used nanoparticles (NPs) that can potentially combat the dental

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A CUMULATIVE REVIEW ON THERAPEUTICFLORAE USED TOTREAT DIABETES MELLITUS

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Keywords:

Diabetes mellitus, Insulin resistance, Blood glucose, Insulin secretagogues, oxidative stress, Phytoconstituents

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ABSTRACT: Diabetes Mellitus is a chronic ailment characterized by clinical manifestations like hyperglycaemia. The development of novel drugs is based on the understand ding of insulin resistance and oxidative damage leading to secondary complications of diabetes such as Retinopathy, Nephropathy etc. In the modern era, there are numerous allopathic drugs available for the treatment of the ailment. Herbs include a variety of chemical components that are responsible for their therapeutic effects, including polyphenols, saponins, terpenoids, alkaloids, sesquiterpenes, and flavonoids. Herbal remedies, which include traditional medicines, have the ability to treat a wide range of disorders. The use of herbs to treat a condition provides extra benefits by targeting the root cause of the disease. They are less expensive, more effective at lower dose frequencies and have less side effects when compared to allopathic medicines. This review includes a wide range of various phytoconstituents derived from different medicinal plants for the treatment of diabetes mellitus.

INTRODUCTION: Diabetes Mellitus is a chronic metabolic condition known as hyperglycaemia that is brought on by a rise in blood glucose levels. Blood sugar levels will be higher than they would be under normal circumstances. It is mostly caused by a drop in insulin production or activity in the body. When we ingest foods (carbohydrates, lipids, fats, and proteins), glucose enters our cells and gives us the energy we need for daily activities [1]. To provide energy, the blood transports glucose to every single cell. The hormone Insulin is created by pancreatic beta cells and is the final step in the glucose cycle.

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Higher blood glucose levels result from inadequate insulin production or improper body utilisation by the pancreas. Medical consequences brought on by the condition include damage to the eyes and nerves, neurological problems, heart problems, and impairments in metabolic function.

Diabetes causes an imbalance between insulin resistance and pancreatic insulin production [2]. 9.3% of people in the world today have diabetes. In the years after 2045, it will increase by up to 10.2%. Natural herbs are now crucial in the treatment of many diseases following the pandemic of COVID-19. When compared to allopathic medications, herbal remedies are more cost-effective, have fewer adverse effects, and require less frequent administration. In order to control diabetes, numerous herbs have been mentioned in various literature sources [3]. According to ADA, there are three forms of DM [4, 5, 6].

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Synthesis, Characterization of Quinalino Oxadiazoles and evaluation for their in Vitro Antitubercular Activity

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ABSTRACT

Tuberculosis (TB) constitutes one of the most dangerous and serious health problems around the world. It is one of the lives threatening bacterial infectious disease caused by a gram positive, obligate, non-spore forming, non-motile, lipid rich cell wall containing mycolic acid belongs to genus mycobacterium which affects humans is mycobacterium tuberculosis. The development to resistance of multi drug therapy has become increasingly a serious problem, particularly, during last decades. Hence the critical importance is to develop and to design of a new agent which is active against resistant organism. So by keeping above facts, we planned to synthesize a new 2-quinolone derivatives linked substituted oxadiazole derivatives for possible anti-TB agents and to screened them for their high potency and selectivity to kill or inhibit the activity of mycobacterium tuberculosis. In search of new anti-TB agents, various 2-quinolone derivatives linked substituted oxadiazole derivatives were synthesized by different synthetic route. Synthesized compound were confirmed on the basis of physicochemical and spectral analysis, and further all the synthesized derivatives were evaluated for their in vitro antitubercular activity against Mycobacteria tuberculosis (Vaccine strain, H37 RV strain): ATCC No- 27294 by Alamar Blue Dye method. As resulted, Isoniazid, Ethambutol, Pyrazinamide, Rifampicin, Streptomycin showed potent antitubercular activity at concentration tested (0.8 µg/ml to 1.6 µg/ml). As can be clearly seen in the case of antitubercular activity, the worst inhibition was achieved for 2-quinolone linked oxadiazole derivatives (4a-4j). Despite continued efforts to discover improved antitubercular agents, there has been little success to discover 2-quinolone linked oxadiazole derivatives.

Keywords: 2-Quinolone, Oxadiazole, antitubercular, mycobacterium tuberculosis, Alamar Blue Dye.

INTRODUCTION

The knowledge in the synthesis of higher nitrogen containing heterocyclic system has evolved greater interest just because of their enormous usage in chemotherapy [1]. Although considerable advances have been achieved over recent decades in the field of research and development of novel structural prototypes as effective antimicrobials, current antimicrobial chemotherapy still suffers from two major limitations. The first is the lack of selectivity of conventional antimicrobial agents, which in turn brings about unwanted side effects. The second is acquisitions by the microorganism of multi drug resistance. The design of new agents, active against resistant organism is of critical importance.

Quinolones and their derivatives occur in numerous natural products, having interesting biological properties and comprise a relatively large growing and most interesting group in the field of chemotherapy as antibacterial. They also have wide range of applicability such as pharmaceuticals, agrochemicals and synthetic building blocks have been discovered [2]. Thus development of efficient methods for their synthesis is still attracting much interest for organic chemist, even though synthesis of quinolone have been known for more than a century [3,4].

Heterocyclic compounds containing nitrogen, is an indispensable structural unit for both the chemist and the biochemist. Among the antimicrobial agents discovered in recent years the various 2-quinolone as antimicrobial agent has stimulated remarkable interest in the synthesis of 2-quinolones bearing heterocycles [5]. Numerous biological activities of 2-quinolone have been described; antimicrobial [6], antioxidant and anti-inflammatory [7], antitumor [8], Fornesyl transferase inhibitor [9], antiangiogenic [10], acetylcholinesterase reactivators [11-14], and anti-tuberculosis [15-17]. In spite of such stimulating properties it was contemplated to synthesize some newer congeners of 2-quinolone linked oxadiazole with a need to explore their potency as better antitubercular activity. The 4-hydroxy-methyl/phenyl-2H-pyrano [3,2-c]quinoline-2,5(6H)-diones were synthesized according to literature proced

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DEVELOPMENT AND CHARACTERIZATION OF TAPENTADOL NANOGEL BY MODIFIED EMULSIFICATION TECHNIQUE

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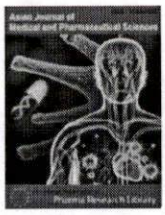
ABSTRACT

This study focuses on creating a new kind of tapentadol, a strong pain reliever, using a modified emulsification diffusion technique. The tapentadol will be in the form of a nano gel, and its design, development, and properties will be thoroughly examined. The nano gel was developed using a blend of polymers, namely Eudragit RL-100, ethylcellulose, and Carbopol 934P, which were selected for their beneficial characteristics in drug delivery systems. The research used a modified emulsification diffusion technique to provide accurate control over the distribution of particle sizes. This approach improved the bioavailability and therapeutic effectiveness of tapentadol. The process involves emulsifying tapentadol in an appropriate organic solvent and then diffusing it into an aqueous phase containing the polymer mix while stirring under controlled conditions. The produced nano gel underwent extensive characterization testing. The physicochemical characterisation, which included analyzing particle size, measuring zeta potential, and examining shape using SEM, showed that tapentadol nanoparticles were evenly distributed inside the gel matrix. The rheological characteristics of the nano gel were assessed to determine its appropriateness for topical use. In addition, research on the kinetics of drug release showed that the nano gel formulation effectively and consistently released tapentadol, suggesting its ability to provide long-lasting pain relief. The stability investigations have proven that the formed nano gel is stable over a long period of time. Overall, the tapentadol nano gel created using the modified emulsification diffusion process using Eudragit RL-100, ethylcellulose, and Carbopol 934P



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Skeletal Muscle Relaxant Activity of Hydroalcoholic Extract of *Tephrosia Purpurea* Leaves in Mice

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Abstract

The study aimed to investigate the skeletal muscle relaxant activity of hydroalcoholic extract of tephrosiapurpurea using the rotarod apparatus. The hydroalcoholic extract of tephrosia purpurea was evaluated for itsmuscle relaxant potential using the rotarod apparatus in mice. Some of the most popular herbs used to relaxmuscles include chamomile, liquorice, and kava root. The mice are divided into three groups consisting offour animals each. Group 1 served as control, which received distilled water 10mL/kg, group 2 received thestandard drug diazepam, at a dose of 10mg/kg, p.o., group 3 received the hydroalcoholic extract of tephrosiapurpurea orally at a dose of 200mg/kg. (2). The animals are remained on rotarod for 5min at 25rpm or moreafter successive trails were included in the study. After the administration of control, standard, and testmaterial,thefallofftimefrom rotating rod wasnotedafter 30minutes.

Keywords: Tephrosia purpurea, Diazepam, Rotarod, hydroalcoholic extract.

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Contents

1. Introduction

Muscle Spasms: Muscle spasms are involuntary contractions of muscle fibres that can cause a sudden, painful tightening of the affected muscle. They can occur in any muscle in the body, but are most commonly experienced in the legs, arms, back, and neck. Muscle spasms can be caused by a variety of factors, including overuse, dehydration, electrolyte imbalances, nerve damage, and certain medical conditions. While muscle spasms are generally not serious, they can be painful and disruptive, affecting a person's ability to perform daily activities. Treatment options for muscle spasms include stretching, massage, heat or cold therapy, over-the-counter pain relievers, and prescription medications. In severe cases, surgical intervention may be necessary. Preventive measures, such as staying hydrated, maintaining a healthy diet, and avoiding overuse of muscles, can also help reduce the frequency and severity of muscle spasms.

Causes of muscle spasms:

Muscle spasms can be caused by a variety of factors, including:

- Overuse or fatigue of muscles
- Dehydration or electrolyte imbalances

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INSIGHTS INTO MYOCARDIAL INFARCTION: PREVALENCE, RISK FACTORS, AND TROPONIN LEVELS IN STEMI AND NSTEMI

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Abstract:

Introduction: Myocardial infarction (MI), or heart attack, remains a significant health concern globally, with ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI) being two distinct subtypes. Understanding the prevalence, risk factors, and troponin levels associated with these subtypes is critical for optimizing patient care and outcomes. This abstract presents insights from a prospective study investigating MI prevalence, risk factors, and troponin levels in STEMI and NSTEMI patients, contributing valuable information to cardiovascular medicine.

Materials and Methods: The study "Insights into myocardial infarction: prevalence, risk factors, and troponin levels in STEMI and NSTEMI patients" which was carried at "Department of Cardiology" at Narayana Hospitals, Nellore, in collaboration with 1440 bedded multidisciplinary teaching hospital.

Discussion: We included 200 patients in our study who are willing to provide the information in which maximum are male 132 (66%) and the rest were females 68 (34%). The study at Narayana Medical College and Hospital analyzed data from 200 myocardial infarction (MI) patients, revealing 70% STEMI and 30% NSTEMI cases. Most patients in both groups were aged 51-60, with males comprising 68.5% in STEMI and 60% in NSTEMI. Troponin levels varied by gender, with common risk factors including hypertension, smoking, alcohol consumption, diabetes mellitus, and obesity. Chief complaints upon admission included chest pain, left shoulder pain, and palpitations. During the study, 5% of patients died, slightly more in the STEMI group. These findings offer insights into MI epidemiology and clinical characteristics.

Conclusion: In conclusion, the data encompassing 200 patients highlights a significant prevalence of ST-elevation myocardial infarction (STEMI) at 70%, with non-ST-elevation myocardial infarction (NSTEMI) accounting for 30%. Major risk factors, including hypertension, smoking, and alcohol consumption, underscore the importance of targeted cardiovascular risk management. Elevated troponin levels, notably in 24 males (17 STEMI, 7 NSTEMI) and 15 females (15 STEMI, 4 NSTEMI), emphasize the gender-specific distinctions in myocardial infarction presentations. This tells us that troponin levels alone are insufficient for diagnosing myocardial infarction (MI); while elevated troponin levels are indicative of myocardial damage, the diagnosis of MI also requires clinical assessment, including symptoms, electrocardiogram (ECG) findings,

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An innovative hybrid biosorbent composed of nano ZnO and marine macro algae *Jania rubens* embedded in an alginate/PVA matrix: insights into Pb^{2+} removal in water†

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Nanoparticles of zinc oxide (ZnO) combined with a *Jania rubens* (JR) biosorbent have been embedded in a sodium alginate (SA)–polyvinyl alcohol (PVA) matrix. This hybrid biosorbent was characterized by FTIR, and the presence of functional groups involved in the adsorption of Pb^{2+} was revealed. SEM/EDX analyses have shown that the hybrid biosorbent exhibited porous microstructures which are decorated with ZnO nanoparticles (hydrodynamic size of 68 ± 2 nm). The removal of Pb^{2+} from aqueous medium was thoroughly investigated. The adsorption capacity has been measured at q_e = 39.1 mg g^{-1} at pH = 5 and T = 303 K with the concentration of biosorbent and Pb^{2+} at 2.0 g L^{-1} and 100 mg L^{-1}, respectively. The Freundlich and Langmuir isotherms have been used to model the adsorption process, from which the maximum adsorption capacity (q_m) of the hybrid biosorbent was calculated to be 111 mg g^{-1}. The adsorption kinetics are represented by a pseudo-second order model. In addition, the hybrid biosordent was regenerated and reused for four cycles for the removal of Pb^{2+}.

1. Introduction

Non-biodegradable and hazardous heavy metal ions including lead (Pb^{2+}), cadmium (Cd^{2+}), chromium (Cr^{6+}), mercury (Hg^{2+}), and arsenic (As^{3+}) are still released into the natural environment *via* inefficiently treated wastewaters from various industries, thus being a serious threat to the ecosystem and human health.[1] Therefore, wastewater treatment should be improved by additional techniques like biological, chemical, or physical ones. In this work, particular attention is paid to removing Pb^{2+} using a physico-chemical method *i.e.* an adsorption process using an innovative hybrid biosorbent. Even in small concentrations, Pb^{2+} can cause carcinogenicity/genotoxicity, thus resulting in severe damage to brain, kidneys, and blood cells.[1] The World Health Organization has set the permissible limit of lead in potable water at 0.01 mg L^{-1}.[2] On the other hand, effective and eco-friendly approaches are required to remove such low concentrations of lead. Adsorption using a biomass-based sorbent (biosorption) is a technologically proven method for the sequestration of heavy metals, especially for biosorbents composed of algae,[3–7] fungi,[8] bacteria,[9] plants[10,11] and chitin.[12] In addition, hybrid biosorbents, *i.e.*, biosorbents combined with synthetic adsorbents, are even more promising regarding their stability, reproducibility, cost-effectiveness, thus their efficiency. In particular, the design of hybrid biosorbents by their entrapment with metal oxide nanoparticles in a polymeric matrix has appeared as an attractive technology since such nanoparticles can provide specific adsorption of heavy metal ions.[13] For example, a TiO_2-yeast nanocomposite exhibited a higher metal removal of Cr(VI) compared to conventional biosorbents.[14]

In addition, the immobilization of adsorbents into biological matrices appears promising for practical reasons like the ease of complete post-separation after treatment along with a limitation of nanoparticle release in the treated system. Therefore, natural polymers are excellent candidates because of their biodegradability and eco-friendly nature.[15] Among natural

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FORMULATION AND IN-VITRO EVALUATION OF TRIAMCINOLONE ACETONIDE BUCCAL PATCHES

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ABSTRACT

Triamcinolone is a corticosteroid used to treat different fiery conditions in the body from unfavorably susceptible rhinitis to intense intensifications of various sclerosis. Triamcinolone can be utilized as a onetime aide therapy of osteoarthritic knee pain, or first line as a skin therapy of corticosteroid responsive dermatoses. In present study buccal drug delivery of Triamcinolone was developed to overcome the first pass metabolism and to reduce frequency of dosing compared to oral route. Matrix type of buccal patches was developed by using polymers Methocel K15M, Methocel K100M and Sodium CMC. Buccal patches were prepared by employing solvent casting method. Propylene glycol was selected as plasticizer. Drug excipient compatibility studies were carried out by using FTIR, and it was observed that there were no interactions. Formulations were prepared with the varying concentrations polymers ranging from F1-F9, and all the formulations were evaluated for various physical parameters Physical appearance, Flatness, Weight variation, Thickness, Folding endurance, Drug content, Moisture uptake and Moisture content and all the results were found to be were found to be within the pharmacopeial limits, in-vitro drug release studies by using dialysis membrane. Among all the 9 formulations F2 with 97.06% drug release is the optimized formulation.

KEYWORDS: Triamcinolone acetonide, buccal patches, Methocel K15M, Methocel K100M and Sodium CMC.

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Formulation and In -Vitro Evaluation of Flutrimazole Microspheres Loaded Transdermal Gel

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A b s t r a c t

Flutrimazole is a wide-spectrum antifungal drug. It is used for the topical treatment of superficial mycoses of the skin. Flutrimazole is an imidazole derivative. Present study was aimed to formulate and evaluate microspheres loaded transdermal gel containing Flutimazole as a model drug by employing Xanthan gum, Methocel K4M and Methocel K15M as polymers microspheres were prepared by using aqueous ionotropic gelation method. Different polymers, different drug to polymer(s) ratio(s) and other parameters were screened to study their effects on properties of microspheres and to optimize each parameter. The microspheres obtained were subjected to preformulation studies like bulk density, tapped density, angle of repose, carr's index, hausner's ratio the results obtained were with in the limit.The microspheres were characterized by Percentage yield, Drug entrapment efficiency, Particle size analysis, then the optimized microspheres formulation F8 were incorporated into the gel prepared with Methocel K100M, Sodium CMC and Guar gum as polymers and was evaluated by parameters like Visual inspection , pH measurement , Spreadability studies , Viscosity and in-vitro drug release by using franz diffusion cell for results from the diffusion results FG4 showed maximum percentage drug release of 96.85 hence it was considered as the optimized formulation.

Keywords: Flutrimazole, ionotropic gelation method,transdermal gel, Xanthan gum, Methocel K4M, Methocel K15M, Methocel K100M, Sodium CMC and Guar gum.

A r t i c l e I n f o

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C O N T E N T S

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Research Article

Formulation and In-vitro Evaluation of Repaglinide Floating Microspheres

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Abstract

Repaglinide is an antidiabetic drug in the class of medications known as meglitinides, and was invented in 1983. Repaglinide is an oral medication used in addition to diet and exercise for blood sugar control in type 2 diabetes mellitus.The mechanism of action of repaglinide involves promoting insulin release from β-islet cells of the pancreas; like other antidiabetic drugs, a main side effect concern is hypoglycemia. Inthepresent work, gastro retentive floating microspheres of Repaglinide using sodium alginate along with Locust bean gum Chitosan gellan gum as copolymers were formulated to deliver Repaglinide via oral route. The results of this investigation indicate thationic cross linking technique Ionotropic gelation method can be successfully employed to fabricate Repaglinide microspheres. The technique providescharacteristic advantage overconventional microsphere method, which involvesan all-aqueous system, avoids residual solvents in microspheres. Other methods utilize largervolume of organic solvents,which are costly and hazardous because of the possible explosion,air pollution, toxicity and difficult to remove traces of organic solvent completely.FT-IR spectraof the physical mixture revealed that the drug is compatible with the polymers and copolymers used. Increase in the polymer concentration led to increase in% Yield, % Drug entrapment efficiency, Particle size, % swelling and % Mucoadhesion.The *invitro* drug release decreased with increase in the polymer and copolymer concentration.Analysis ofdrug release mechanism showed that the drug release fromthe formulations followed non-Fickian diffusion and the best fit model was found tobe zero order. Based on the results of evaluation tests formulation coded F3 was concluded as best formulation.

Keywords: Repaglinide, Locust bean gum, Chitosan, gellan gum and floating microspheres.

Article Info

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Contents

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ORIGINAL ARTICLE

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Formulation and Evaluation of Capecitabine Microspheres for Colorectal Cancer

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Colorectal Cancer, Microspheres, Controlled Release

ABSTRACT

The present study aimed to formulate and evaluate Capecitabine microspheres for colorectal cancer, reduce dosing frequency, and improve patient compliance. Microspheres were prepared by emulsion solvent evaporation using polymers like ethyl cellulose (E.C.) and HPMC K-I00 in different ratios. The prepared microspheres were evaluated for flaw properties, percentage yield, drug entrapment efficiency, and *in vitro* dissolution studies. Results showed that as the concentration of polymer ratio increases, it affects the particle size, percentage yield, and drug release from the microspheres. The percentage yield of F6 microspheres was up to 95.13%. The release study was done with simulated intestinal fluid (SIF - pH 7.4) for 24 hours. It showed that the drug was protected from being released in the physiological environment of the intestine and efficiently released in the colon (95.85%). The optimized formulation F6 exhibited the drug release in a sustained manner arid following zero order, non-Fickian diffusion mechanism. An accelerated stability study was carried out for the optimized formulation. The results showed no significant changes in percentage drug entrapment efficiency, particle size, and *in vitro* controlled release of Capecitabine. The surface morphology analysis formulation F6 showed a spherical structure with smooth surface morphology. The prepared microspheres are promising drug delivery for sustained oral administration to target the colon and provide a better kinetic profile with improved bioavailability.

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INTRODUCTION

Colorectal cancer has been the 2nd most frequent cancer killer as a whole, as well as 3rd most frequent cause of lung cancer-related mortality with in united states, both in females and males. Colorectal drug delivery, like a safe and effective therapeutic colorectal cancer, will provide effective concentration like an anti-cancer advisor at receptor sites but also spare the traditional cells for lowered dote and lowered duration of treatment [1]. Its effective active targeting of opioids towards the colorectal through the digestive tract (GIT) did require a shield of such an opioid from degeneration and discharge within the stomach and intestine and afterward makes sure sustained release inside the proximal intestines.

Minimize a dose intensity and mitigate adverse effects compared with conventional medicine. Capecitabine is an orally administered chemother-

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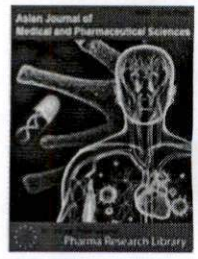

Research Article

Formulation and In-Vitro Evaluation of Pindolol Tablets for Buccal Drug Delivery System

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Abstract

Pindolol is a nonselective beta blocker which is used in the treatment of hypertension. It is also an antagonist of the serotonin 5-HT1A receptor, preferentially blocking inhibitory 5-HT1A auto receptors, and has been researched as an add-on therapy to selective serotonin reuptake inhibitors (SSRIs) in the treatment of depression. The aim of the present study was to develop buccal formulation of Pindolol to maintain constant therapeutic levels of the drug for over 12 hrs. HPMCK15M, Locust bean gum and Xanthan gum were employed as polymers. Pindolol dose was fixed as 10 mg. Total weight of the tablet was considered as 60 mg. Polymers were used in the concentration of 10 mg, 20 mg and 30 mg concentration. All the formulations were passed various physicochemical evaluation parameters and they were found to be within limits. Whereas from the dissolution studies it was evident that the formulation (F4) showed better and desired drug release pattern i.e.,98.53 % in 12 hours. It followed zero order release kinetics mechanism.

Keywords: Pindolol, Buccal Tablets, HPMCK15M, Locust bean gum and Xanthan gum.

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Contents

1. Introduction

Buccal administration refers to a enteral route of administration by which drugs diffuse through the oral mucosa (tissues which line the mouth) and enter directly into the bloodstream. Buccal administration may provide better bioavailability of some drugs and a more rapid onset of action compared to oral administration because the medication does not pass through the digestive system and thereby avoids first pass metabolism [1]. As of May 2014, buccal forms of the psychiatric drug, asenapine; the opioid drugs buprenorphine, naloxone, and fentanyl; the

Original Article

Efficacy of Sacubitril/Valsartan versus Losartan in Heart Failure Patients with Respect to Improvements in Ejection Fraction and New York Heart Association Functional Class

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ABSTRACT

Background: Heart failure (HF) is a complicated clinical disease that develops when the Left ventricular becomes symptomatic due to anatomical or functional ventricular malfunction. The symptoms emerge from a cardiac output that is insufficient to meet the body's metabolic needs. Globally, HF has emerged as a major health issue, with an estimated prevalence of >37.7 million. While HF with reduced ejection fraction (HFrEF) is more frequently seen in Indian patients, HF with preserved EF seems to be more prevalent in the western population. **Objective:** This study was conducted to determine the efficacy of sacubitril/valsartan (S/V) versus losartan in patients with HF with respect to improvements in EF and New York Heart Association (NYHA) functional class symptoms. **Materials and Methods:** A prospective cohort study was conducted on 62 HF patients who are either on angiotensin receptor-neprilysin inhibitor or angiotensin receptor blocker therapy for a period of 6 months, i.e., November 2021 to April 2022, who attended the Inpatient Cardiology Department of Narayana Medical College and Hospital. By using a semi-structured questionnaire, the data was gathered. The 2013 edition of Microsoft Excel and SPSS version 20.0 software were used for data analysis. **Results:** Subjects in the S/V group showed a 56% reduction in subjects with HFrEF from the beginning to end of the follow-up, while subjects in the losartan group showed only 16% reduction. With respect to NYHA functional class, subjects in the S/V group showed greater reduction in subjects in NYHA class III and NYHA class IV by the end of follow-up when compared to the losartan group. **Conclusion:** S/V showed better efficacy in improving EF and NYHA functional class when compared to losartan.

KEYWORDS: *Ejection fraction, heart failure, losartan, New York heart association functional class, sacubitril/valsartan*

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INTRODUCTION

Heart failure with reduced ejection fraction (HFrEF) is a major worldwide health issue that, if untreated, can be deadly. Heart failure is linked to reduced life expectancy, increased hospitalization frequency, and poor quality of life, and it is a serious public health concern.[1] Evidence-based studies suggest that angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin receptor blockers (ARBs) as the first-line treatment for all grades of HFrEF. Aldosterone antagonists, beta-blockers, diuretics, digoxin, nitrates, and inotropic agents are also adjunctive therapies.[2]

In 2015, the Food and Drug Administration approved sacubitril/valsartan (S/V) for HFrEF treatment;

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Unlocking the Potential of Aquasomes: A Comprehensive Review on Innovative Nanocarriers in Drug Delivery and Beyond

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Abstract

Aquasomes are nanoparticles fabricated from ceramics developed to enhance proteins and peptides stability, providing an adequate residence time in circulation. It consists of ceramic core coated with poly hydroxyl oligomer, on which protein and peptide drug can be adsorbed. Aquasomes preparation, characterization, and application in protein and peptide drug delivery are discussed. Microneedles are promising transdermal approach; it involves creation of micron-sized pores in the skin for enhancing the drug delivery across the skin, as their length ranged between 150 and 1500µm. The delivery system has been successfully utilized for the delivery of insulin, hemoglobin, and various antigens. Oral delivery of enzymes like serratiopeptidase has also been achieved. This article discusses the problems faced in the delivery of clinically important peptides and presents aquasomes as a reliable approach to troubleshoot them.

Keywords: Aquasomes; Delivery; Microneedles; Peptides; Proteins

Full-length article *Corresponding Author, e-mail: drprsha@gmail.com

1. Introduction

Aquasomes are one of the most recently developed delivery system for bioactive molecules like peptide, protein, hormones, antigens and genes to specific sites. Aquasomes are spherical in shape with 60–300 nm particles size. These are nanoparticulate carrier systems but instead of being simple nanoparticles these are three layered self assembled structures, comprised of a solid phase nanocrystalline core coated with oligomeric film to which biochemically active molecules are adsorbed with or without modification. These structures are self-assembled by noncovalent and ionic bonds. The solid core provides the structural stability, while the carbohydrate coating protects against dehydration and stabilizes the biochemically active molecules. The delivery system has been successfully utilized for the delivery of insulin, hemoglobin, and enzymes like serratiopeptidase etc. This reviews the principles of self assembly, the challenges of maintaining the conformational integrity and biochemical activity of immobilized surface pairs, the convergence of these principles into a single functional composition and its application in various fields of pharmacy.

Aquasomes are nanoparticulate carrier system but instead of being simple nanoparticle these are three layered self assembled structures, comprised of a solid phase nanocrystalline core coated with oligomeric film on which biochemically active molecules are adsorbed with or without modification. Aquasomes are like "bodies of water" and their water like properties protect and preserve fragile biological molecules, and this property of maintaining conformational integrity as well as high degree of surface exposure is exploited in targeting of bio-active molecules like peptide and protein hormones, enzymes, antigens and genes to specific sites. These three layered structures are self-assembled by non-covalent and ionic bonds. These carbohydrate stabilize nanoparticles of ceramic are known as "aquasomes". The pharmacologically active molecule incorporated by co-polymerization, diffusion or adsorption to carbohydrate surface of pre formed nanoparticles. Aquasomes discovery comprises a principle from microbiology, food chemistry, biophysics and many discoveries including solid phase synthesis, supramolecular chemistry, molecular shape change and self assembly [1].

ORIGINAL ARTICLE

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To develop and evaluate the *in-vitro* anti oxidant and anti-inflammatory activity of polyherbal Gel

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Herbal treatments, in-vitro, World Health Organisation, Curcuma longa

ABSTRACT

Herbal medicines are used for their safety, efficacy, cultural acceptability and lesser side effects. The chemical constituents present in plants are a part of the physiological functions of living system and hence they are believed to have better compatibility with the human body. These drugs are made from renewable resources of raw materials by eco-friendly processes and will bring economic prosperity. An herb is a plant or plant part used for its scent, flavor, or therapeutic properties. They are sold as tablets, capsules, powders, teas, extracts, and fresh or dried plants. People use herbal medicines to try to maintain or improve their health. Products made from botanicals, or plants, that are used to treat diseases or to maintain health are called herbal products, botanical products, or phytomedicines. A product made from plants and used solely for internal use is called an herbal supplement.

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INTRODUCTION

Herbal treatments are employed because they are safe, effective, culturally acceptable, and have fewer negative effects. Because plant chemical ingredients are part of the physiological operations of living systems, they are thought to be more compatible with the human body [1]. These pharmaceuticals will create economic prosperity because they are made from renewable raw ingredients using eco-friendly procedures [2]. Herbs are plants or plant parts that are utilised for their smell, flavour, or therapeutic effects. Dietary supplements include herbal medicines [3]. They are available in the form of tablets, capsules, powders, teas, extracts, and fresh or dried plants. Herbal remedies are used by people in an attempt to preserve or enhance their health [4]. Herbal products, botanical products, or phytomedicines are products made from botanical or plants that are used to treat illnesses or maintain health [5]. An herbal supplement is a plant-derived substance that is only used internally. Medicinal plants, commonly referred to as medicinal herbs, have been identified and utilised in traditional therapeutic practises since prehistoric times. Plants generate hundreds of chemical substances for a number of purposes, including resistance and protection from insects, fungi, illnesses, as well as herbivorous mammals. Whether in modern or traditional medicine, medicinal plants are used to preserve health, to treat a specific illness, or both. In 2002, the Food and Agriculture Organisation estimated that over 50,000 medicinal plants were utilised globally. In 2016, the

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DESIGN AND IN-VITRO CHARACTERIZATION OF TERAZOSIN ORAL DISPERSIBLE TABLETS BY USING VARIOUS SUPERDISINTEGRANTS

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ABSTRACT

Terazosin is a medication used to treat symptoms of an enlarged prostate and high blood pressure. For high blood pressure, it is a less preferred option. It is taken by mouth. In the present work Croscarmellose sodium, Sodium starch glycolate and Crospovidone were employed as super disintegrating agents to enhance the solubility and dissolution rate of selected drug molecule. All the formulations were prepared by direct compression method using 6mm punch on 8 station rotary tablet punching machine. The blend of all the formulations showed good flow properties such as angle of repose, bulk density, tapped density. The prepared tablets were shown good post compression parameters and they passed all the quality control evaluation parameters as per I.P limits. Among all the formulations F5 formulation showed maximum % drug release i.e., 98.73 % in 10 min hence it is considered as optimized formulation. The F5 formulation contains Sodium starch glycolate as super disintegrate in the concentration of 20 mg.

KEYWORDS: Terazosin, Croscarmellose sodium, Crospovidone and Sodium starch glycolate.

INTRODUCTION

Oral administration of drugs is preferred due to its ease of swallowing, distress avoidance, versatility and most significantly, patient compliance. Large number of patients finds it difficult to swallow tablets and capsules, and do not take their medicines as prescribed. It is estimated that 50 % of the population affected by this problem, which finally results in a

Health Sciences Review
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Educational Review

HDAC inhibitors: A novel approach to hyperglycaemia management and treatment

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Research Article

Check for updates

Formulation and Evaluation of Captopril Loaded Niosomal Transdermal Films

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Abstract: Captopril was the first angiotensin-converting enzyme (ACE) inhibitor used for the management of hypertension. The aim of this study was to prepare and evaluate niosomal-loaded captopril transdermal films. Captopril has good solubility but has poor permeability and reduced bioavailability in the presence of food. The aim and objective are to improve bioavailability and permeability. The captopril-loaded niosomal formulations were prepared by thin film hydration technique, using materials like non-ionic surfactants such as Spans of different grades 20, 40, 60 and 80 and solvents like ethanol and chloroform. The FT-IR results revealed that there was no interaction between excipients and captopril. All the formulations showed better encapsulation efficiency. The dissolution studies showed prolonged drug release in comparison to pure captopril. On comprising all formulations, F3 showed sustained release of 98.44% up to 12hrs. The optimized niosomes of captopril were used to prepare transdermal films using methyl cellulose, HPMC E5, HPMC K4M and HPMC K15M as a film forming agents and dibutyl phthalate as a plasticizer. All the formulated captopril transdermal films were evaluated for drug content, folding endurance, weight variation and *in-vitro* drug permeation. The *in-vitro* drug permeation was found to be 99.58% over a period of 12 hrs. Based on the above results, administering niosomal-loaded captopril through the transdermal route is a better approach.

Keywords: Bioavailability, Captopril, Niosomes, Non-Ionic Surfactants, Permeability and Transdermal Films.

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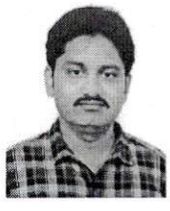

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Evaluation and Estimation of Treatment Outcomes of Antibiotics in Paediatrics with Respiratory Tract Infections

Chintala Lakshmi Sindhura[1], **Neeli Vinisha**[2], **Peruri Vyshnavi**[3], **Chevuru Sri Vishnu Vardhan**[4], **Barugu Sai Pratap**[5], **Dr. Kudipudi Harinadha Baba**[6]

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ABSTRACT

Antimicrobial resistance (AMR) is a growing problem all around the world, especially in India. Respiratory tract infections are defined are infections affecting the upper and lower respiratory tract involved in respiration. Depending on the affected parts respiratory infections are further classified as lower respiratory tract infections and upper respiratory tract infections. The study concluded that, the antibiotic use was found to be reasonable & rational in majority of the cases and all the antibiotics were prescribed from inside the essential drug list.

Keywords: Antimicrobial resistance, Respiratory tract infection, Antibiotics, Micro organisms

INTRODUCTION

Antibiotics

Antibiotics are the type of antimicrobials that are used for treating and preventing bacterial infections. These substances are produced by microorganisms, which either kill or inhibit the growth of bacteria.(1)

Antibiotics can be divided into

1) Broad-spectrum antibiotics
2) Extended-spectrum antibiotics
3) Narrow-spectrum antibiotics

Sometimes one antibiotic is predictably effective against all of the bacteria that are most likely to be causing an infection and so further testing may not be needed. A broad-spectrum antibiotic is an antibiotic that acts on both gram-negative (-ve) and gram-positive (+ve) bacteria or any bacteria that can act against a wide range of disease-causing bacteria.(2)(3)

Narrow spectrum antibiotics are theantibiotics that are able to kill or inhibit limited species of bacteria. The extended-spectrum penicillins are a group of antibiotics that have the widest antibacterial spectrum of all penicillins. Beta-lactam antibiotics (penicillin), cephalosporins, monobactams, carbapenems, and vancomycin. Also bactericidal are daptomycin, fluoroquinolones, metronidazole, nitrofurantoin, co-trimoxazole, and telithromycin.(4)

Antimicrobial resistance (AMR) is a growing problem all around the world, especially in India. The leading causes of AMR are as follows: over-prescription, patients not completing their course of antibiotics, overuse in livestock and fish farming, poor infection control in health-care settings, poor hygiene and sanitation in health-care settings, and empirical use of antibiotics.(5)

Causes of antibiotic resistance crisis

- **Overuse of antibiotics**-many epidemiological studies has shown a direct relationship between antibiotic consumption and the emergence of Antibiotic resistance.
- **Inappropriate prescribing**-incorrectly prescribed antibiotics contribute to the development of resistant bacteria. Studies have shown that indication, choice of agent, or duration of antibiotics is incorrect in 30-50% of cases.
- **Extensive Agricultural use**-antibiotics used as growth supplements in livestock.
- **Lack of availability of new antibiotics.**

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KNOWLEDGE ON BIRTH SPACING AMONG ANTENATAL MOTHERS-AN EXPERIMENTAL CROSS SECTIONAL STUDY

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ABSTRACT

In India contraceptive needs of young couples especially in the area of spacing pregnancies is mostly unmet. The unmet contraceptive method is directly found to be a reason for short birth Interval. The methods available for birth spacing and knowledge regarding the health benefits of birth spacing are largely unknown. The study aims to considered in the study is birth space awareness of antenatal mothers. The study has been conducted in the department of gynaecology in a tertiary care hospital. Study area The study has been conducted in department of gynaecology in a tertiary care hospital. The study Population was 160 patients. Descriptive survey research design was used to conduct the study among antenatal mother. Out of 200 women, 160 participants were recruited in to the study and 40 participants were not willing to participate in the study. Among them, 40 % were aware of the health benefits of spacing between two pregnancies and 56.25% were between 26-35, 25 % population were below 25 year and 18.75 % population were above 35 years of age were participated in the trial. Most of the study population were completed their secondary education and very few were completed graduation in the study participants Proper health education and awareness programmes would help to widespread practice of birth spacing contraceptive methods that would improve the maternal and infant health in long-term.

KEYWORDS: Contraceptive, birth spacing, health benefits, spacing pregnancies.

INTRODUCTION

Family welfare programme is also essential in the interest of the individual and family

ORIGINAL ARTICLE

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In-Vitro Anthelmintic Activity of Hydroalcoholic Extract of Leaves of Hemerocallis littoralis

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ABSTRACT

Helminths have been intestinal parasites, which are the most typical bacterial infections. Like living beings through emerging economies, they usually generate a worldwide disease burden a certain outstrips better-known circumstances, including malaria and tuberculosis. Anthelmintics are the drug used to eliminate and live this same variety of intestinal parasitic parasite organisms from the gastrointestinal and epithelium like humans and other mammals. These same anthelminthic actions like hydroethanolic leaf extract like Hymenocallis malicious code to alter computers have been analyzed through elderly Indian earthworms (peridia post human). This ended up finding that now the hydroethanolic extricate like Hymenocallis malicious code to change the laptop decided to show anthelminthic actions at an intensity like 20mg/ml, 40mg/ml, and 80mg/ml of each. This same compared with the standard had been Albendazole (20 mg/ml).

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INTRODUCTION

These helminthic infections are among the most widespread human bacterial infections in developing countries [1]. Worldwide, helminth infection represents a danger to food security and is a significant issue in livestock production. Infection with whipworms, hookworms, and roundworms can cause helminthiasis. It threatens public health and raises the risk of pneumonia, inflammation, anemia, and malnutrition in developing nations [2]. The World Health Organization states parasitic infections influence more than two billion individuals. Infections with helminths are now understood to contribute to several acute and chronic illnesses in humans and livestock [3].

The effectiveness of medicinal herbs as anthelmintic and antiparasitic agents are studied globally. Parasitic infections in humans and animals have been treated with various medicinal herbs [4]. Drugs called anthelmintics are used to treat illnesses caused by worms, flukes, nematodes, roundworms, tapeworms, and other parasites [5]. In therapeutic settings, plant substances like phytochemicals are essential, and plant substances are used in a conventional medical system to treat infectious diseases. The phytochemical tannin is renowned for its anthelmintic activity, which hinders various biological processes essential to the life cycle of parasitic nematodes [6]. inside the various researchers, we have tried unsuccessfully to investigate the

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drugs and drug candidates

MDPI

Review

The Effects of Vitamin D on Preventing Hyperglycemia and a Novel Approach to Its Treatment

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Abstract: The dietary reference levels for vitamin D were established with an emphasis on its role in bone health; however, with the identification of vitamin D receptors in all body tissues novel associations with other metabolic disorders, such as diabetes, are being researched. Aside from its standard function as the main regulator of calcium absorption, vitamin D also controls the calcium pool, mediates the activity of beta cell calcium-dependent endopeptidases, encourages the conversion of proinsulin to insulin, increases insulin output, and raises insulin activity in peripheral insulin target tissues. Both immune cells and pancreatic beta cells include vitamin D receptors. A deficiency of vitamin D causes glucose intolerance and affects insulin secretion. Different pathogenic characteristics of the disease are linked to a number of vitamin D-related genes. It has been proven that vitamin D supplementation lowers the risk of type 1 and type 2 diabetes and its associated problems. In this article, we discussed a few prospective clinical trials on vitamin D that are necessary to clearly demonstrate the role of vitamin D in the prevention and management of diabetes.

Keywords: vitamin D; diabetes mellitus; insulin resistance; beta cell protection; cholecalciferol

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1. Introduction

Diabetes is a chronic metabolic disorder characterized by elevated levels of glucose in the blood. It occurs when the body either does not produce enough insulin or cannot effectively use the insulin it produces. Insulin is a hormone produced by the pancreas that regulates the absorption and utilization of glucose by cells for energy [1]. The word diabetes mellitus, however, was first used by the Greek doctor Aertaeus. Diabetes, which means "to pass through" in Greek, and mellitus, which denotes sweetness and is derived from the Latin word for honey, are two words that go together. Weight loss and polyuria are signs related to diabetes which were initially noted by the Egyptians. With roughly a single fatality every ten seconds, diabetes is a major contributor to long-term illness and early mortality. It also claims more lives each year than HIV/AIDS [2].

There are three main types of diabetes: type 1 which results from a lack of insulin due to an autoimmune attack, type 2 which is due to resistance to the effects of insulin, and the pancreas may not produce enough insulin to compensate, and Gestational diabetes which may develop during pregnancy [3]. According to the International Diabetes Federation (IDF), the number of people living with diabetes has been increasing significantly over the past few decades, primarily driven by the rise in type 2 diabetes. If current trends continue, it is expected that the number of individuals with diabetes will continue to grow in the coming years. Factors contributing to the increase in diabetes cases include aging

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Hydroalcoholic Extraction of Ipomoea pes caprae Leaf Extract of Antifungal Activity Against Candida albicans

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ABSTRACT

The current study is to prepare hydroalcoholic extraction of ipomea pes caprae leaf extract of antifungal activity against candida albicans. Ipomoea pes caprae leaves are extracted using a hydroalcoholic solvent in a 1:9 ratio, which consists of 1 part water as well as 9 parts of the alcohol. These plant extracts are used to treat antifungal diseases. The antifungal activity of ipomoea pes-caprae leaf extract and their respective zone of inhibitions were evaluated. From the results, it was confirmed that the hydroalcoholic extract obtained from the leaves of the ipomoea pes caprae demonstrated exceptional activity as compared to that of a typical medication.

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INTRODUCTION

Ipomoea pes-caprae is a common pantropical creeping vine in the family Convolvulaceae, sometimes known as bayhops, bay-hops, beach morning glory, or goat's foot [1]. It tolerates saline air and grows on the top portions of beaches. It serves as one of the best known examples of oceanic dispersal and is one of the most prevalent and extensively dispersed salt-tolerant plants. Its seeds are unharmed by salt water and float. Its current genus was assigned to the original description by Linnaeus by Robert Brown in 1818. Antioxidant, anti-inflammatory, antinociceptive, antibacterial, collagenase inhibitory, antispasmodic, anticancer, antitumor and antiproliferative, as well as multidrug-resistance efflux inhibitory actions are some of the key activities associated with this plant. A workable method of phytoremediation has been described as using aquatic macrophytes to extract nutrients from wastewater and to prevent freshwater eutrophication [2]. For this purpose, several plants, including I. aquatica, have been studied. It might be a desirable choice for this usage because it is marketable and edible. Especially the leaves, which are a good source of carotene, are fed to livestock as high-nutrient green fodder. Cattle, pigs, fish, ducks, and chicken all eat it. Additionally, it is mentioned that I. aquatica may have a mild laxative effect in little doses. Utilised as a diuretic, laxative, and carminative is Ipomoea pes caprae. Abdominal ailments are treated by Ipomoea pes caprae. Pes-caprae leaves are used in Thailand, Malaysia, China, Mauritius, and Australia to cure a variety of painful and inflammatory joint and skin conditions, including arthritis, rheumatism, boils, bedsores, and stings from jellyfish and stonefish. Ipomoea pes caprae is having antifungal activity. Ipomoea pes caprae is also effective in treating fever,

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RESEARCH ARTICLE
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Hepatoprotective activity of novel nutraceuticals of curculigo Orchioide root extract

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ABSTRACT

The aim of this study is to investigate hepatoprotective activity of hydroalcoholic extract of curculigo orchoide root in highly active antiretroviral administered rats. Animals were randomized and divided into five groups (I-V) of six animals in each group. Group I served as normal control and fed orally with normal saline 5ml/kg body weight daily for seven days. Group II rats as toxic control where as Group IV and V were treated with low dose and high doses with the Curculigo orchoide s respectively in controlled released formulation orally daily for seven days. Group III animals are treated with standard drug silymarin 25mg/kg(p.o) daily for seven days. On the seventh day, paracetamol suspension was given by oral route, in a dose of 750mg/kg body weight to all rats except the rats in group I .The biochemical parameters were estimated after an 18h fast following the last dose

Keywords: *Weight, Daily, Control, Activity*

INTRODUCTION

Liver is the largest organ in human body.it is a metabolically active organ responsible for many vital life functions.it also play a great role in carbohydrate, protein metabolism and fats also.it also play a surprising role in the maintenance ,performance and regulating homeostasis of the body. 15Nutraceuticals contain health-supporting ingredients or natural components that have an ability health benefit for the body. 1Curculigo orchioide is a small herb found in India in the sub tropical Himalayas from Kumaon eastwards and in the western ghats from Konkan southwards.it is commonly known as kalimusli in Hindi.it tuberous roots are used as alternative ,demulsecent, diuretic ,restorative and for the treatment of jaundice.it is also the components of several ayurvedic tonics.3

Evaluation Of Hepatoprotective Activity

Method used in the present study (Paracetamol induced hepatotoxicity)

Hepatoprotective activity of aqueous extract of the root of Curculigo .orchoides was studied using this method6

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Evolution of cytotoxicity of the phytopigments Isolated from Spirulina platen sis using MTT assay

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ABSTRACT

Phytopigments of Spirulina platen sis extract has anticancer activity against various types of cancer cell cultures. However, study about effect of phytopigments on Monkey Kidney Epithelial Cells (Vero Line), Human breast cancer (MCF-7) and Human Colon Cancer-(HT-29)cell lines. This study aimed to reveal the anticancer activity of phytopigments from Spirulina platensis extract on Vero line, MCF-7 and HT-29 cells. The research was an in vitro experimental study, with the investigation on cytotoxicity as the anticancer parameters. cytotoxicity test was conducted through MTT assay to observe the visualization and inhibition of proliferation of different concentrations of phytopigments like Zeaxanthin, Phycocyanin, β-Carotene, Phycoerythrin, Chlorophyll-a, and Chlorophyll-b in several incubation times on the cancer cell line. The obtained data were then processed statistically with the Two-Way ANOVA test at a significance value of $p < 0.05$. Based on the results, it could be postulated that in all pigments the phycocyanin shows better activity compare with other at IC50on Vero at152.2 ± 0.20, MCF-7 at 22.60 ± 0.30, HT-29 at 23.30 ± 0.32 compare with standard doxorubicin.

Keywords: *Anticancer; Monkey Kidney Epithelial Cells; Human breast cancer; Human colon cancer; MTT assay*

INTRODUCTION

"More than 8.8 million people died from cancer in 2015, making it the second-leading cause of death globally and accounting for 1 in 6 fatalities worldwide"1 (Dewi et al.2018). "A normal cell can change into cells that express the malignant phenotype through a multistep process called carcinogenesis. As a result of the process, which involves frequent feedback loops as well as the full collapse or failure of controlled stages such cell differentiation, proliferation, and programmed cell death (apoptosis), cancer cells proliferate quickly and begin to metastasize"2 (Nazih & Bard et al.,2018).

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A REVIEW ON MICROBEADS – PHARMACEUTICAL CARRIER DRUG DELIVERY SYSTEM

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ABSTRACT

This review discussed the usage of microbeads as a medication delivery mechanism and natural polymers. Any drug delivery system's purpose is to deliver a therapeutic amount of medicine to the appropriate place in the body while also achieving and maintaining the correct drug concentration. This could be accomplished using a multiparticulate dosage form, such as beads, which are divided into numerous separate pieces, known as subunits, each of which possesses some desired features. The advantages of micro particle drug delivery systems over single unit dose form are well documented. One of the solutions that does not entail the use of harsh chemicals or elevated temperatures is the production of microbeads medication delivery systems. Conventional procedures include the use of ionotropic gelation, emulsion gelation, polyelectrolyte complexation, and other methods. Because of the ease of preparation, the majority of work has been done on the preparation of microbeads using the ionotropic gelation process rather than alternative approaches. The ionotropic gelation approach relies on the capacity of polyelectrolytes to crosslink with counter ions to generate a hydrogel sustained release formulation.

KEYWORDS: Microbeads, controlled drug delivery, oral, natural polymer.

INTRODUCTION

Oral ingestion is the oldest and commonest mode of drug administration. It is increasingly being used for the delivery of therapeutic agents due to its low cost, safety, ease of administration and high levels of patient compliance. More than 50% of the drug delivery systems available in market are oral drug delivery systems.[1] Sustained release-drug delivery systems (SRDDS) provide drug release at a drug concentration which is maintained in the

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PREPARATION AND EVALUATION OF PRELIMINARY BUCCAL FILMS USING SAGO STARCH AND HPMC E_{15} POLYMERS

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ABSTRACT

The main aim of this work is to design mucoadhesive buccal films using natural and semi-synthetic polymers such as Sago Starch and Hydroxy Propyl Methyl Cellulose (HPMC E_{15}). The mucoadhesive buccal films were prepared using the solvent casting method. The natural polymer and semi-synthetic polymer are used in the preparation of blank buccal films as they are biocompatible, biodegradable, non-toxic and safe to use. The blank films were prepared to understand the physicochemical characteristics of the different polymeric films before formulating drug-loaded films. The prepared buccal films were studied for physicochemical properties and various evaluation parameters such as thickness, folding endurance, weight variation, swelling index, and statistical analysis. The blank buccal films show good physicochemical properties and evaluation parameters were in acceptable range. These preliminary results indicate that polymeric films can represent a valid vehicle for the buccal delivery of drugs.

KEYWORDS: HPMC E_{15}, Sago Starch, Blank Buccal films, Buccal Drug Delivery, fast-pass metabolism.

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PREPARATION AND EVALUATION OF PRELIMINARY MICROSPHERES USING PECTIN AND XANTHAN GUM POLYMERS

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ABSTRACT

This work is aimed to design blank microspheres using natural polymers such as pectin, and xanthan gum in order to achieve controlled release. The microspheres were prepared by ionotropic gelation method using different ratios of sodium alginate-pectin, and sodium alginate-xanthan gum polymers. The blank microspheres were prepared to understand the morphological characteristics and physicochemical properties. Microspheres were subjected to different evaluation parameters such as morphology, percentage yield, flow properties are the angle of repose, bulk density, tapped density, Carr's index, Hausner's ratio, particle size, and swelling index. The prepared microspheres are spherical in shape, and show good flow properties and pH-dependent swelling was seen, indicating that water intake was low in an acidic medium and elevated in an alkaline medium pH. The successful development of blank microspheres using natural polymers. These preliminary results indicate microspheres can represent a valid carrier for controlled drug delivery of drug.

KEYWORDS: microspheres, pectin, xanthan gum, sodium alginate, and pH-dependent.

INTRODUCTION

Microspheres are small spherical particles ranging in size from 1 to 1000 μm that are used in the controlled delivery of drugs. The oral controlled drug release using hydrophilic polymers in multiple dosage forms which aids in the uniform and prolonged release of drug.[1,2]

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FORMULATION AND EVALUATION OF VILDAGLIPTIN – MORINGA OLEIFERA MICROBEADS

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ABSTRACT

Background: Natural gums and mucilages are being used due to their abundance in nature, safety and economy. The present investigation was an effort to study the suitability of gum obtained from Moringa oleifera as polymer in sustained release microspheres combination with another natural polymer sodium alginate. Gum is obtained from exudes of stem of Moringa oleifera. The gum is a polyuronide constituting of arabinose, galactose, and glucoronic acid in the ratio of 10:7:2, and rhamnose in traces. In this study gum isolated from trunk of Moringa oleifera was studied at different concentrations and conditions alone as well as in combination with sodium alginate. Aim of the study: To prepare and evaluate vildagliptin microbeads using moringa oleifera polymer which is a natural polymer. Methods: The microparticles containing vildagliptin was prepared by ionotropic gelation method. Results: Various parameters like colour, odour, taste, solubility, sphere forming capacity and its stability were studied. The gum was found to be hygroscopic and organoleptically acceptable. The stability of spheres formed by Moringa gum alone and in combination with sodium alginate in different crosslinking agents was observed. The gum was found to form a spherical bead at 7% concentration. The stability of the microspheres formed from moringa gum was increased with the addition of sodium alginate in different concentrations. By increasing the concentration of sodium alginate with 7% moringa gum affected the size and shape of spheres. From the study it was concluded that Moringa gum and sodium alginate are biocompatible and can be effectively used as polymer in sustained release microspheres. Conclusion: after thorough study of the results obtained it was concluded that moringa oleifera can be used as carrier for preparation of microbeads. There is a significant difference

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FORMULATION AND INVITRO EVALUATION OF TEMAZEPAM TABLETS FOR SUBLINGUAL DRUG DELIVERY SYSTEM

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ABSTRACT

Temazepam, like many other similar and related benzodiazepines, acts as a gamma-aminobutyric acid (GABA) modulator and is capable of eliciting a variety of actions including sedation, hypnosis, skeletal muscle relaxation, anticonvulsant activity, and anxiolytic action. In the present work temazepam sublingual tablets using Locust bean gum, Croscarmellose sodium and Crospovidone as super disintegrating agents to enhance the solubility and dissolution rate of selected drug molecule. All the formulations were prepared by direct compression method using 6mm punch on 8 station rotary tablet punching machine. The blend of all the formulations showed god flow properties such as angle of repose, bulk density, tapped density. The prepared tablets were shown good post compression parameters and they passed all the quality control evaluation parameters as per I.P limits. Among all the formulations F3 formulation showed maximum % drug release i.e., 98.13% in 8 min hence it is considered as optimized formulation. The F3 formulation contains Locust bean gum as super disintegrate in the concentration of 30 mg.

KEYWORDS: Temazepam, sublingual tablets, Croscarmellose sodium, Locust bean gum and Crospovidone.

INTRODUCTION

Sublingual drug delivery of the medication implies arrangement of the medication under the tongue and drug comes to straightforwardly into the circulation system through the ventral surface of the tongue and floor of the mouth.[1] The fundamental system for the retention of

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Insilico Assessment of Phytoconstituents in *Myxopyrum Smilacifolium* Blume against Arthritis

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Myxopyrum smilacifolium **Blume geographical occurrence is southern part of India and its usage for the treatment of various diseases has been marked in Traditional Medicine. The present study was aimed to examine the phytoconstituents in Myxopyrum smilacifolium Blume for antiarthritic activity by insilico approach. Antiarthritic activity of phytoconstituents in Myxopyrum smilacifolium Blume was performed by using software Autodock 4.0. For each phytoconstituents the pharmacokinetic parameters are also assessed by online tools. The study revealed that phytocompounds, Arenarioside, Verbascoside and Myxopyroside showed docking score of about -16.4 kcal/mol, -10.6kcal/mol and -6.5 kcal/mol comparatively high when compared with the docking score of standard Ibuprofen of about -6.2 kcal/mol. It had proven to posses the inhibition activity against inflammatory mediator as it shown a good binding affinity between ligand and the receptor site COX-2. The evaluated pharmacokinetic parameters of the only 3 phytoconstituents obeyed Lipinski's rule of 5. Arenarioside, Verbascoside and Myxopyroside are the phytoconstituents of Myxopyrum smilacifolium Blume shown high docking score and it can be explored further for SAR and simulation studies are needed to ensure the antiarthritic activity.**

Keywords: Arenarioside; Docking; In silico; Lipinski's; Myxopyrum.

A musculoskeletal condition results in excruciating long-term joint pain, edema, and movement restriction. A sizable portion of the population is affected by these diseases and their mortality rate has increased.[1] The most prevalent musculoskeletal disorder worldwide and a condition as old as mankind is arthritis. More than 100 different types of arthritis exist. Among these are autoimmune disorders such as osteoarthritis, rheumatoid arthritis, psoriatic arthritis, and others. The arthritis foundation estimates that two-thirds of people had arthritis in 2007, and the census indicates that by 2030, that number will rise to 40% of the population.[2-3] Although there are several therapies for different types of arthritis, each has its own disadvantages. Natural treatments of plant

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A Bibliometric Analysis of Investigations on Black Pepper Published from 1978 to 2023

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Abstract

Spices have played a crucial role in human history, shaping cultures, trade routes, and culinary traditions for millennia. The diverse and fascinating world of spices, examining their origins, cultural significance, economic impact, and the multifaceted roles they play in both traditional and modern societies. Black pepper (Piper nigrum) stands as one of the most globally recognized and widely used spices, with a history rooted in ancient trade routes and culinary traditions. The multifaceted aspects of black pepper, encompasses its botanical characteristics, historical significance, culinary applications, medicinal properties, and its current standing in the global spice market. Therefore, this study aims to map investigations on black pepper using the bibliometric method. A bibliometric investigation was adopted through metadata planning with the keywords "Investigation AND black AND pepper" from Scopus Database (1978-2023). Metadata is stored in CSV and BibTex types. Furthermore, CSV format of Scopus metadata for analysis using the counting method on VOS viewer. Mapping results showed that the number of publications related to the black pepper experienced a minimum investigation, most occurring from 2007 to 2023. Most articles relating to Black pepper were published in the Food and Chemical Toxicology. The most prolific studies were conducted by Elangovan Kannan, Gunasekaran Vetrichelvi, Niranjali Devaraj is the most cited. Studies on black pepper need to be explored and most of the keywords with a fairly high density included phenols, hplc, antivenom. Meanwhile, the rarely investigated themes include piperaceae.

Keywords: Bibliographic, Citations, Black pepper, Vos viewer

Full-length article **Corresponding Author*, e-mail: *drprsha@gmail.com*

1. Introduction

Spices are plant-based ingredients used to flavour, colour, or preserve food. They are usually extracted from the seeds, bark, roots, fruits, or other parts of plants [1]. For millennia, they have been an essential component of human culinary customs and conventional medical procedures [2]. In addition to adding flavour and perfume to food, spices play an important role in the cultural and historical identities of many different cuisines worldwide [3]. Professionals in the food business can also benefit from using spices as a beneficial reference [4-5]. One of the most extensively used and traded spices in the world is black pepper (Piper nigrum) [6]. It is well known for both its strong flavour and adaptability in cooking [7]. Black pepper is said to have come from India's Malabar Coast and has long been a highly valued item in the spice trade [8]. Black pepper has been acknowledged for possible health advantages in addition to its culinary usage [9]. Because black pepper (Piper nigrum) has such cultural, gastronomic, and maybe health-related significance, it has been the focus of several scientific studies. Scholars have investigated several facets of black pepper, encompassing its chemical constitution, growing methods, medical attributes, and its uses in multiple sectors. Scholars have carried out investigations to examine the molecular makeup of black pepper, pinpointing essential constituents accountable for its taste and fragrance. Gas chromatography-mass spectrometry (GC-MS) is one technology that is frequently used in these investigations to give extensive insights into the volatile chemicals present [10]. Black pepper production techniques have been optimised via research on soil needs, irrigation techniques, and insect management. The goal of these studies is to

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Design and In-vitro Characterization of Domperidone Oral Thin Films

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Abstract- Domperidone is a medication used as an antiemetic, gastric prokinetic agent, and galactagogue. It may be taken by mouth, and is available as a tablet, orally disintegrating tablets, suspension, and suppositories. The drug is used to relieve nausea and vomiting; to increase the transit of food through the stomach (by increasing gastrointestinal peristalsis); and to promote lactation (breast milk production) by release of prolactin. In present study oral thin films of Domperidone were developed to have a faster on set of action. The oral thin films were developed by using polymers sodium alginate, xanthan gum and PVP K30. Oral thin films were prepared by employing solvent casting method. Propylene glycol was selected as permeation enhancer and plasticizer. Drug excipient compatibility studies were carried out by using FTIR, and it was observed that there were no interactions. Formulations were prepared with the varying concentrations polymers ranging from F1-F6, and all the formulations were evaluated for various physical parameters Physical appearance, Weight variation, Thickness, Folding endurance, Tensile strength, Drug content, Moisture uptake, Moisture content and all the results were found to be were found to be within the pharmacopeial limits, in-vitro drug release studies by using dialysis membrane. Among all the 6 formulations F5 formulation which contain PVP K30 50 mg and shown 98.06% cumulative drug release within 30 min. And compared to sodium alginate, xanthan gum and PVP K30, sodium alginate showed better drug release profile.

Key words: Domperidone, sodium alginate, xanthan gum and PVP K30.

INTRODUCTION

Recent developments in the technology have presented viable dosage alternatives from oral route for pediatrics, geriatric, bedridden, nauseous or noncompliant patients. Buccal drug delivery has lately become an important route of drug administration. Various bioadhesive mucosal dosage forms have been developed, which includes adhesive tablets, gels, ointments, patches and more recently the use of polymeric films for buccal delivery, also known as mouth dissolving films. Mouth dissolving films, a new drug delivery system for the oral delivery of the drugs, was developed based on the technology of the transdermal patch. [1] The delivery system consists of a very thin oral strip, which is simply placed on the patient's tongue or any oral mucosal tissue, instantly wet by saliva the film rapidly hydrates and adheres onto the site of application. It then rapidly disintegrates and dissolves to release the medication for oromucosal absorption or with formula modifications, will maintain the quick-dissolving aspects allow for gastrointestinal absorption to be achieved when swallowed. In contrast to other existing, rapid dissolving dosage forms, which consist of liophylisates, the rapid films can be produced with a manufacturing process that is competitive with the manufacturing costs of conventional tablets. [2]

Domperidone is a dopamine antagonist it acts as a gastrointestinal emptying (delayed) adjunct and peristaltic stimulant. The gastroprokinetic properties of domperidone are connected to its peripheral dopamine receptor blocking properties. Domperidone enables gastric emptying and decreases small bowel transfer time by increasing oesophageal and gastric peristalsis and by lowering oesophageal sphincter pressure. The antiemetic properties of domperidone are related to its dopamine receptor blocking activity at both the chemoreceptor trigger zone and at the gastric level. It has strong affinities for the D2 and D3 dopamine receptors, which are found in the chemoreceptor trigger zone, located just outside the blood-brain barrier, which -among others -regulates nausea and vomiting. Buccal delivery of domperidone might be used as an alternative route to overcome the

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Research Article

Formulation Development and Evaluation of Lamivudine Sustained Release Tablets

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Abstract

Lamivudine is used widely in treatment of Hepatitis B and AIDS either alone or in combination with other antiviral drugs because of its water solubility and shorter half-life (5-7 hrs) drug requires frequent dosing by oral route, off various recent techniques for controlling drug release. The study was undertaken with an aim to formulation development and evaluation of Lamivudine sustained release tablets using polymers hydroxypropylmethylcellulose and ethylcellulose. Lactose monohydrate was used as channeling agent and or as filler. Preformulation study was done initially and results directed for the further course of formulation. Based on preformulation studies different formulations of Lamivudine were prepared using selected excipients. FT-IR study performed for the identification and compatibility study of drug with polymers and found the characteristics peaks of various groups and matched with pharmacopoeial standard. Powder and blends were evaluated for tests - bulk density, tapped density, compressibility index, Hausner's ratio before being punched as tablets. From the above results and discussion it is concluded that formulation of sustained release tablet of Lamivudine containing 80 mg of hydroxypropyl-methylcellulose E15 (high viscosity grade) and 80 mg of ethylcellulose i.e. formulation F7 can be taken as an ideal or optimized formulation of sustained release tablets for 16 hours release as it fulfills all the requirements for sustained release tablet and our study encourages for the further clinical trials and long term stability study on this formulation.

Keywords: Lamivudine, sustained release tablets, hydroxypropyl-methylcellulose E15, ethylcellulose.

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CONTENTS

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Research Article

Formulation and Characterization of Transdermal Drug Delivery System of Losartan Potassium

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Abstract

The aim of present work is to fabricate and characterize the transdermal patches of Losartan potassium by using HPMC K 100, Carbopol 934 and Eudragit RL 100 as a polymers with following objectives such as design and evaluated results of present investigation revealed that, Suitable analytical method based on UV-Visible spectrophotometer was developed for Losartan Potassium λ_{max} of 205 nm was identified in phosphate buffer, pH 7.4. All the excipients used did not interfere with the estimation of Losartan Potassium at analytical wavelength 205 nm respectively. Transdermal patches of Losartan Potassium were successfully prepared using HPMC K100, Eudragit RL100 and Carbopol 934 as polymers by Solvent casting Technique. The formulation L8 (2% HPMC, 1% CP) has shown optimum and high percentage of drug release (99.21%) in concentration independent manner. Hence, transdermal patch of Losartan Potassium could be promising drug delivery as they minimize the dose, overcome the side effects, simplify treatment regimen and improve patient compliance. The present investigation is worthy of further research, especially in terms of performance in pharmacokinetics, *In-vivo* studies on higher animals and controlled clinical studies on human beings.

Keywords: Transdermal patches, HPMC K 100, Carbopol 934, Eudragit RL 100.

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Contents

1. Introduction

Transdermal drug delivery system is defined as self-contained, discrete dosage forms which, when applied to the intact skin, deliver the drug, through the skin, at a controlled rate to the systemic circulation.[1] Delivering medicine to the general circulation through the skin is seen

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JOURNAL OF PHARMA INSIGHTS AND RESEARCH

REVIEW ARTICLE

A Review on Different Types of Therapy for Diabetes Mellitus

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Abstract: Diabetes Mellitus, the second most prevalent global health concern, is characterized by inappropriate insulin production in the body, leading to a metabolic disorder. In the contemporary landscape, numerous medications with distinct therapeutic attributes, targets, and formulations are continually being unearthed to benefit patients. A contemporary trend involves symptom-focused medication use rather than addressing the root cause of illnesses, potentially leading to the onset of additional serious medical conditions. Historically, plant-based remedies were employed, but the subsequent evolution of chemical compound drugs with undesirable reactions became prevalent. Post the COVID-19 era, there is a resurgence of interest in plant-based medications. These remedies offer potential solutions for a range of conditions. Alongside pharmaceuticals and herbal remedies, modern science is progressing, introducing new technologies for the detection and treatment of various illnesses. This includes advancements in homoeopathy, Ayurvedic medicine, Nanotechnology, Artificial Intelligence (AI), Deep and Machine Learning, and Robotics. This review elucidates the innovative technologies and traditional therapies employed in the treatment of diabetes, providing a comprehensive overview of the evolving landscape in diabetes management.

Keywords: Phytomedicine; Nano medicine; Diabetes mellitus; Ayurveda; Insulin, Robotics.

1. Introduction

Diabetes mellitus is a prevalent chronic endocrine disorder, marked by hyperglycemia resulting from absolute or relative insulin deficiency. Its complex etiology encompasses various causes, with the primary classifications being type 1 and type 2 diabetes [1]. The pathophysiology of type 1 diabetes stems from autoimmune destruction targeting insulin-secreting pancreatic β-cells, resulting in a deficiency of insulin and subsequent hyperglycemia. Type 1 diabetes represents approximately 10-15% of the diabetic population. Conversely, type 2 diabetes is characterized by abnormal insulin secretion and peripheral resistance, constituting the predominant form that accounts for 85-90% of all diabetes cases [2]. This research paper aims to elucidate the intricate mechanisms and distinct characteristics of these major diabetes types, contributing valuable insights for the comprehension, diagnosis, and management of this widespread and consequential endocrine disorder.

The management of diabetes has evolved significantly over the years, witnessing the discovery of numerous medications and therapeutic strategies. A contemporary trend in medical practice involves addressing symptoms rather than targeting the root cause of illnesses, potentially leading to the onset of additional serious medical conditions. Historically, plant-based remedies were employed, but the subsequent evolution of chemical compound drugs with undesirable reactions became prevalent. In the wake of the COVID-19 era, there is a resurgence of interest in plant-based medications, which offer potential solutions for a range of conditions. Alongside pharmaceuticals and herbal remedies, modern science is progressing, introducing new technologies for the detection and treatment of various illnesses. This includes advancements in Ayurvedic medicine, Nanotechnology, Artificial Intelligence (AI), Deep and Machine Learning, and Robotics [3]. This paper comprehensively reviews both the traditional and innovative approaches in the treatment of diabetes, exploring the evolving landscape of diabetes management in the context of diverse therapeutic modalities and technologies

2. Traditional methods in the management of diabetes

Ayurveda, an ancient and traditional system of Indian medicine, holds significant relevance in the contemporary diabetes management. Rooted in the profound wisdom of Ayur, meaning "life," and Veda, signifying "knowledge," Ayurveda was initially conceptualized to promote overall health. Over time, it evolved to become a comprehensive therapeutic approach for addressing various ailments, including diabetes. Ayurvedic treatments harness a wealth of knowledge about herbs with active constituents possessing therapeutic efficacy, providing a holistic perspective on healing. [4]

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JOURNAL OF PHARMA INSIGHTS AND RESEARCH

SHORT COMMUNICATION

Phytotherapeutic potential of natural polyphenols used in alleviating cancer

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Abstract: These days, cancer is still the second biggest cause of death and causes serious issues with public health. The largest class of phytochemicals present in fruits, vegetables, and spices are called polyphenols. Secondary metabolites called polyphenols are used to treat a number of illnesses, including diabetes mellitus, hypertension, cancer, and osteoporosis. Additionally, they function as antioxidants and antimicrobials, extending the shelf life of food items. In this article, we primarily examine the role that polyphenols play in cancer therapy via molecular signaling pathways. In addition, multiple studies have shown that natural polyphenols have potential use in cancer prevention and treatment. These mechanisms may include antioxidant, anti-inflammatory, and anti-microbial effects on the carcinogenesis process. Prior to COVID-19, despite the serious side effects of antibiotics, people gave them a lot of importance. The world needs to know that natural plant sources have been used historically to heal a variety of illnesses. As technology advances, more users of natural therapy are turning to pharmaceuticals made of chemicals. Covid-19 has a significant influence on the use of plant sources in therapeutics. This review provides examples of how polyphenols are used to treat cancer.
Keywords: Apoptosis; Cell Proliferation; Polyphenols; Oxidative stress; Isoflavonoids

1. Introduction

Compounds with an aromatic ring and one or more hydroxyl groups are referred to as polyphenols. They are frequently present in tea, fruits, vegetables, and spices [1]. By encapsulating and shielding the polyphenols, nanocarriers improve their water solubility and bioavailability[2]. These are plant-extracted secondary metabolites. In addition to treating cancer, it is also used to treat a number of other illnesses, including diabetes mellitus, osteoporosis, hypertension, heart failure, Parkinson's and Alzheimer's disease, and neurodegenerative diseases. This article provides a brief detail about the natural polyphenols and their uses in the cancer treatment

Natural polyphenols can be divided into four Classes as shown in Figure 1 below:

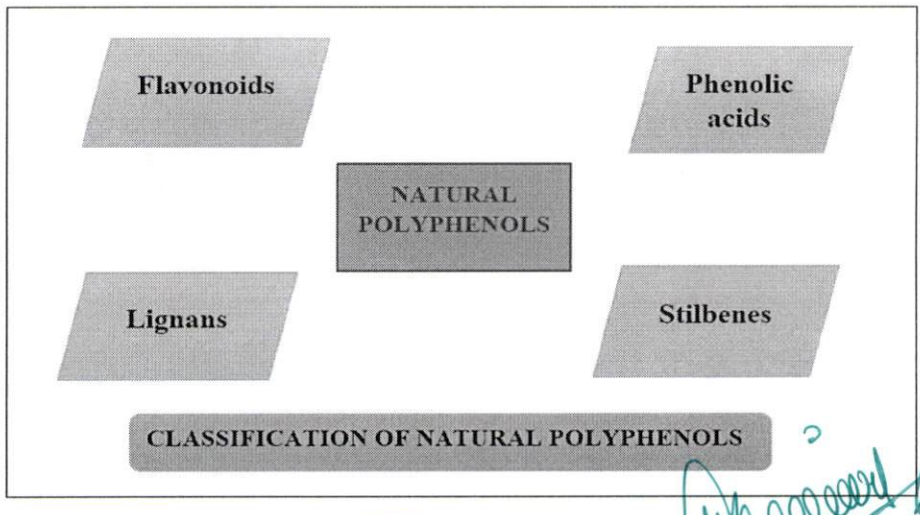

Figure 1. Classification of Polyphenols

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SOLUBILITY AND DISSOLUTION RATE ENHANCEMENT OF OLMESARTAN MEDOXOMIL BY HYDROTROPY AND DEVELOPMENT OF ORAL DISINTEGRATING TABLETS

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ABSTRACT

This research work was designed to enrich the solubility of olmesartan medoxomil by Hydrotropy technique and to develop the oral disintegrating tablets. Olmesartan medoxomil is an anti-hypertensive drug which belongs to BCS Class II having low solubility and therefore low oral bioavailability (26%). In the present study, HMs of olmesartan medoxomil with water soluble carriers like sodium acetate, sodium benzoate and urea were prepared by solvent evaporation method in different weight ratios and the optimized Hydrotropic mixture (HM) was used in the development of olmesartan medoxomil oral disintegrating tablets. HMs was evaluated for drug content and *in vitro* dissolution studies. The results revealed that the dissolution of olmesartan medoxomil HMs was improved greatly for F6 when compared with that of remaining formulations which shows 99.38% of drug release within 60 minutes. The above optimized HM was formulated as oral disintegrating tablets by direct compression using superdisintegrants like Croscarmellose sodium (CCS), (ODT1-ODT3), and sodium starch glycolate (SSG), (ODT4-ODT6). Olmesartan medoxomil oral disintegrating tablets were evaluated for pre-compression and post compression parameters. Amongst the formulations prepared (ODT1-ODT6), ODT6 was found to be effective formulation comprising of SSG which showed the drug release of 96.31% within 12 min.

Keywords: Bioavailability, croscarmellose sodium, Hydrotropy, Olmesartan medoxomil, Oral disintegrating tablets, Sodium starch glycolate, Solubility.

« Previous: Preparation and Characterization of Novel Co-Crystal Forms of Domperidone

Next: Determination of Total Phenolic and Tannins in different Varities of tea by Colorimetry »

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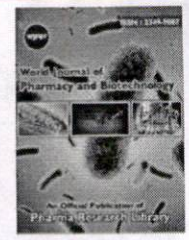

Research Article

Review on Antioxidant Activity

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Abstract

Antioxidants are natural compounds that play a vital role in protecting cells from damage caused by free radicals .Free radicals are highly reactive molecules that can cause oxidative stress, leading to various diseases such as cancer, cardiovascular diseases, and aging. Antioxidants have become scientifically interesting compounds due to their many benefits such as anti-aging and anti-inflammatory[1]. This review article summarizes the mechanisms underlying the antioxidant activity of natural compounds, such as vitamins, flavonoids, carotenoids, and phenolic acids. The review article also provides a comparative analysis of various techniques used for measuring antioxidant activity of natural compounds. The review covers both chemical and biological assays, including the DPPH assay, ABTS assay, FRAP assay, ORAC assay, and comet assay, among others. Overall, this review aim is to crystallize the information on antioxidants regarding to its classification, mechanism of action, role in food processing and determination techniques.

Keywords: Free radicals, Oxidative stress, ROS, Enzymatic antioxidants, Non enzymatic antioxidants, In-vitro assay, In-vivo assay.

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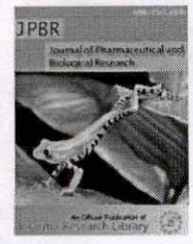

Research Article

Phytochemical Analysis of Borassus Flabellifer by Using Different Solvent Extract

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ABSTRACT

The present study was aimed to evaluate the different solvent extract process of Borassus flabellifer, which have been traditionally used for the medicinal properties. Various medicinal purposes are attributed to the medicinal herbs like Borassus flabellifer plant. Natural plants represent the most source of the care products and prescription drugs. It has played a significant role in health systems around the world. A number of health issues can be treated naturally with traditional herbaceous medicinal plant like Borassus flabellifer. The quantitative and qualitative phytochemical analysis (antioxidants)(1) showed the presence of alkaloids, flavonoids, glycosides, saponins, tannins, phytosterols, triterpenoids and phenols in the Borassus flabellifer plant. In this solvent extract processing by using the Borassus flabellifer fruit.

Keywords: *Borassus flabellifer, phytochemical analysis, solvent extract, phytosterols, saponins, glycosides, tannins, alkaloids, flavonoids, phenols and triterpenoids*

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CONTENTS

1. Introduction

Borassus flabellifer is growing in sandy soil and attaining height 20- 30 m with straight trunk. It is a tall tree and belongs to the Arecaceae family. It is also commonly called palmyra palm. In this plant used to traditional medicinal properties. It is used to treat the antileprotic, diuretic, antiphlogistric, stimulant, skin diseases, flatulence, hyperdipsia, dyspepsia, fever, hemorrhages and general debility. Entire plant parts like fruits, seeds, flowers, and

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Evolution of Antioxidant & Cytotoxicity of the Hydro Alcoholic Extract of Dried Root of Digera Muricata Using MTT Assay

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***Abstract*:-**Digera Muricata, a medicinal plant with a rich history in traditional medicine, has garnered attention due to its potential health benefits. This study investigates the antioxidant and cytotoxic properties of the hydro-alcoholic extract obtained from the dried root of Digera Muricata using the MTT assay. The dried roots of Digera Muricata were subjected to hydro-alcoholic extraction, and the resulting extract was tested for its antioxidant activity using standard assays, including DPPH and ABTS assays. The extract exhibited significant antioxidant potential, demonstrating its ability to scavenge free radicals. hydro-alcoholic extract of the dried root of Digera Muricata possesses notable antioxidant activity and demonstrates promising cytotoxicity against cancer cells. These findings highlight the therapeutic potential of Digera Muricata as a source of natural antioxidants and cytotoxic agents, which could have implications for the development of novel pharmaceuticals or complementary therapies in the field of cancer research and oxidative stress-related diseases.

Keywords: *Digeria Muricata , DPPH,ABTS,MTT, Antioxidant.*

1. Introduction

The study of natural compounds and their potential health benefits has been a focal point of scientific research for centuries. In recent decades, the exploration of phytochemicals from various plant sources has gained significant attention due to their potential therapeutic properties. Among these phytochemicals, antioxidants have been of particular interest because of their ability to neutralize harmful reactive oxygen species (ROS) and protect cells from oxidative damage(1). This research aims to investigate the antioxidant activity and cytotoxicity of the hydro-alcoholic extract of dried Digera muricata root using the MTT assay(3). The MTT assay is a well-established and widely used method for evaluating the viability of cells and assessing cytotoxicity or cell proliferation. It measures the metabolic activity of cells, primarily through the reduction of MTT, a yellow tetrazolium salt, to purple formazan crystals by mitochondrial enzymes in living cells. This change in color can be quantified spectrophotometrically, allowing for the assessment of cell viability and cytotoxicity.(2)

Plant Profile

Digera muricata, commonly known as "rough-leaved turnsole," is a plant species found in various regions across the world, including Asia and Africa. This plant has been traditionally used in herbal medicine for its potential health-promoting properties(4). The dried root of Digera muricata contains a variety of bioactive compounds,

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In Vitro Evaluation Of Antioxidant Potential Cytotoxicity Activity Of Hydro Alcoholic Extract Of Thunbergia Erecta Dried Leaves On Human Cancer Cell Lines

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Abstract

This study delves into the in vitro assessment of the antioxidant potential and cytotoxic activity of a hydro-alcoholic extract derived from Thunbergia erecta leaves against various human cancer cell lines. The antioxidant potential of the extract was evaluated through a series of in vitro assays, including the DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid)) radical scavenging assays, ferric reducing antioxidant power (FRAP) assay, and quantification of total phenolic content. In the assessment of cytotoxicity, several human cancer cell lines, including breast cancer (MCF-7), were exposed to varying concentrations of the extract. Cell viability was ascertained using the MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay.

Keywords: Tunbergia erecta, ABTS radial assay , FRAP ,cytotoxicity, antioxidant.

I. INTRODUCTION

Thunbergia erecta, commonly known as Bush Clock Vine or King's Mantle, is a plant traditionally acknowledged for its medicinal value in various cultures. In recent years, it has garnered attention from the scientific community due to its potential bioactive constituents. The leaves of Thunbergia erecta have been of particular interest, as they are believed to contain compounds with antioxidant and cytotoxic properties[(1)]. Antioxidants play a vital role in neutralizing harmful free radicals and preventing oxidative stress, which is closely linked to the development of various chronic diseases, including cancer. On the other hand, cytotoxicity against cancer cells is a desirable trait in the search for new anti-cancer agents.[(2)]

II. PLANT PROFILE:

BOTANICAL NAME	:	**Thunbergia erecta**
Scientific name	:	**Thunbergia erecta (Benth.)**
Synonym	:	**Meyenia erecta Benth**
Common name	:	**Bush Clockwine, Upright Thunbergia, Blue bell**
Family	:	**Acanthaceae**
Vernacular names		

Lawsone quantification in *Lawsonia inermis L.* by HPLC-MS: how does the temperature and pluviometry affect lawsone concentration?

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ORIGINAL ARTICLE

Design and Evaluation of Captopril-loaded Niosomes

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Abstract

Aim: The goal of this study is to design a niosomal carrier system for captopril for the treatment of hypertension that is capable of delivering the encapsulated drug over a prolonged period of time by overcoming the limitations of conventional dosage forms. Captopril is a water-soluble drug but has low permeability. The main objective is to improve bioavailability and permeability. **Materials and Methods:** The niosomes are prepared by thin film hydration method, using materials like non-ionic surfactants (Span 20, Span 40, Span 60, and Span 80) and solvents such as chloroform and ethanol. **Results and Discussion:** The FTIR results revealed that there is no interaction between captopril and excipients. All the formulations showed better encapsulation efficacy. SEM analysis revealed the size reduction of captopril-loaded niosomes. The dissolution studies showed prolonged drug release. **Conclusion:** On comprising all formulations, F3 showed sustained release of 98.44% up to 12 h. This may be due to the longest saturated alkyl chain and shows the highest entrapment.

Key words: Bioavailability, Captopril, Niosomes, Prolonged drug release

INTRODUCTION

Niosomes are known as non-ionic surfactant vesicles which are microscopic lamellar structures formed on admixture of a non-ionic surfactant, cholesterol, and dicetyl phosphate with subsequent hydration with aqueous media.[1] Niosomes are capable of entrapping a variety of drugs and found as an alternative to liposomes. The niosomes have similar physical properties when compared to liposomes and are comparatively inexpensive delivery systems.[2]

In current years, transferring the drug molecules to the desired site in the biological systems has become a very precise and sophisticated area of pharmaceutical research. The role of the drug delivery system is not only limited to a drug package just meant for administration and convenience but also to bring a required improvement in pharmacological efficacy and safety by carrying the drug molecules to the required site in the most convenient manner.[3] Drug delivery system using colloidal particulate carriers like niosomes has distinct merits over conventional dosage form as the colloidal particulate can act as drug reservoirs.[4] Among different nanovesicular carriers, niosomes are selected as a carrier of choice because of its dominance over others carrier with regard to stability and cost effectiveness.[5] Conventional drug delivery systems face some significant challenges, such as unfavorable pharmacokinetics and distribution, which can lead to undesirable side effects. Drug degradation in blood circulation by the reticuloendothelial system and insufficient drug uptake at the specific site can reduce drug efficacy. Nanocarriers have been extensively investigated in the past decades to overcome the challenges associated with conventional drug delivery systems, due to the advantages such as (i) facilitate targeted drug delivery to the diseased site; (ii) enhance absorption as surface area increases and hence increase bioavailability; (iii) improve pharmacokinetics and biodistribution of active agents; and (iv) increase retention in biological systems and extend the efficacy of drugs.[6]

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FORMULATION AND EVALUATION OF NON- EFFERVESCENT CIPROFLOXACIN FLOATING TABLETS BASED ON EURYALE FEROX SEEDS

Angilicam Avinash[1]*, Mahaboob Sameera Shajahan[2], Jonna Supriya[2], Mikkina Venkata Thanusha[2], Mylari Reshma[2], Musturi Mallikarjuna[2] and Dr. Kudipudi Harinadha Baba[3]

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ABSTRACT

Floating drug delivery system overcomes the physiological problems of gastric retention by decreasing fluctuations in blood drug concentration with consequent reduction in undesirable toxicity and poor efficiency. Ciprofloxacin is a broadspectrum antibiotic active against both Gram-positive and Gram-negative bacteria. It is absorbed completely (70%) after oral administration and having a biological half-life of 3.5 to 4.5 hrs. The purpose of the study was to prolong the gastric residence time of Ciprofloxacin by designing as floating tablets and to study the influence of different polymers on its release rate. Nine formulations of Ciprofloxacin containing varying concentrations of polymers (HPMC E15 and HPMC K4M) were designed. The floating matrix tablets of Ciprofloxacin were prepared by direct compression method. The powder blend was evaluated for angle of repose, bulk density, tapped density, bulkiness, compressibility index and Hausner's ratio; all these values are within the specified limit which indicates good flow properties. The prepared tablets were evaluated for physicochemical parameters such as weight variation, hardness, friability, floating properties (floating lag time, floating time) and drug content. Invitro release studies revealed that out of 9 formulations, formulation F6 was found to be optimized which showed the sustained drug

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REVIEW ARTICLE

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Gold Nanoparticles: A Review

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Gold Nanoparticles, Photothermal Effect, Cancer Cells, Targeted Drug Therapy

ABSTRACT

Gold nanoparticles are small gold particles with a diameter of 1 to 100 nm. Their characteristic surface Plasmon resonance feature aid indistinctive absorption and optical properties which can be characterized and can be useful in many biomedical applications. Gold Nanoparticles can be used as delivery vectors due to their high surface loading capacity of drug, gene, Protein or vaccine. The surface of Gold Nanoparticles can be modified by molecules such as polymers, Ligands, surfactants by conjugation increases its ability to cross the membrane and also helps in reduction of cytotoxic effect due to attraction to targeted areas. So, it can be used in Targeted drug Therapy by conjugating cancer drug molecules to these particles. Gold Nanoparticles absorbs certain wavelength of incident light and converts into heat which is transferred to cancer cells and leads to destruction of cells due to photothermal effect.

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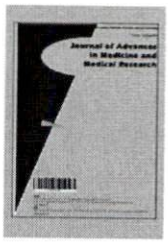
INTRODUCTION

The particles which exist in nanometer range (i.e., 1 to 100 nm) are generally called as Nano particles. These particles are strong enough to hold their electrons such that they can produce Quantum effects and also have unexpected visible properties [1]. The Nanoparticles are beneficial both in material sciences and Biology due to their characteristic physical properties such as conductance, Uniformity and optical properties [2].

Gold nano particles are small gold particles with a diameter of 1 to 100 nm. They contain free electrons which conducts electricity when voltage is applied. These electrons have a tendency to absorb certain wavelength of light which inturn resonate on surface of gold Nanoparticles [3]. This Phenomenon is called as Surface Plasma resonance. Gold nanoparticles have capability to turn certain wavelength of light into heat, i.e., they can be heated up by Radio Frequency which in turn heat up the cancer cells and can destroy them [4].

Generally Bulk gold is yellow in color and is inert in nature where as gold nanoparticles are wine red in color and have Antioxidant property. Gold nanoparticles exist in different sizes ranging from 1 nm to 8 μm [Figure 1]. The color of Gold Nanoparticles mainly depends on its size. If size of Particle is large it appears more red in color for example 20 nm gold nanoparticle has a distinct wine red color [5].

They also exist in different shapes such as Nanorods, Nanospheres, Nano stars, Nano shell, Nanocluster, Nanocube, sub octahedral, decahedral, Multiple twined, Tetrahedral, Nanotriangles, Nanoprisms etc. [6]. Gold Nanorods are solid cylinders of gold of diameter up to 10 nm range whereas Gold nanospheres consist of gold coating over a silica core [7]. If thickness of gold coating changes the wavelength of light absorbed by these particles also changes [Figure 2].



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Effect of Oral Sodium Bicarbonate in Maintaining Acid Base Balance and Qol in Chronic Kidney Disease and Long-Term Acidosis Patients

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

AIM: Aim of the study is to determine the effect of oral sodium bicarbonate in maintaining acid base balance and quality of life in chronic kidney disease and long-term acidosis patients.
Study Design: A prospective observational study.
Study Population: Approximately 174 people who came to nephrology department, Selected based upon inclusion and exclusion criteria.
Study Criteria / Patient Enrollment: Patients are enrolled in study based on inclusion and exclusion criteria.
Inclusion Criteria: The patients who are diagnosed with CKD and receiving oral sodium bicarbonate as part of treatment
Exclusion Criteria: the patients who are having other comorbidities, hypertension, diabetes, and other cardiovascular problems who are not given with oral sodium bicarbonate.
Study Duration : 6 months (December 2021- May 2022).

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Design and Evaluation of Telmisartan Loaded Niosomal Transdermal Films

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Abstract

The motive of this study was to prepare Telmisartan loaded niosomal transdermal films. Telmisartan have good permeability but have low water solubility. The aim is to improve solubility and bioavailability. The Niosomal formulations were prepared by thin film hydration technique by using carriers like non-ionic surfactants (Span 20, 40, 60 and 80) and solvents like Ethanol and Chloroform. The FT-IR results showed that there was no interaction between excipients and telmisartan. All the formulations showed better encapsulation efficiency. SEM results revealed the reduction of crystalline nature of Telmisartan which enhances solubility. On comprising all formulations F3 showed sustained release of 99.08% up to 12hrs. The optimized niosomes of telmisartan was used to prepare transdermal films by using HPMC E5, HPMC K4M, PVP K30 and HPMC K15M as a film forming agents and propylene glycol as plasticizer. All the formulated transdermal films of Telmisartan were evaluated for folding endurance, drug content, weight variation and *in-vitro* drug permeation. The *in-vitro* drug release was found to be 99.48% over a period of 36 hours. Based on the above results it can be concluded that administration of niosomal loaded telmisartan through transdermal route is a superior approach.

Key words: Bioavailability, Crystallinity, Niosomes, Telmisartan, Transdermal films.

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INTRODUCTION

Targeting drugs by a carrier system has been a central matter of research in treatment of various diseases. Various approaches have been investigated to deliver drugs through topical route (Vemula Vaishnavi et al., 2019). In accordance to Biopharmaceutical Classification System class II drugs have no problem with the permeation through membranes but the problem for this class of medications is related with its low aqueous solubility, thus their preface into circulatory system is dissolution rate limited. Different systems have been approved for upgrading the dissolution rate of these practically insoluble medications like derivatisation of the medication, solid state manipulation, use of surfactants, increasing the surface area exposed for dissolution by preparing nano measured vesicles, solid dispersions, microencapsulation and spray drying. Perceptible effort have been done to microencapsulate these drugs in novel vesicular drug delivery systems (NVDDS) covering various routes of administration. These systems objective is to achieve controlled and targeted drug delivery. It is supposed that NVDDS can prolong the residence time of the drug in general circulation. Consequently, a variety of vesicular drug delivery systems such as niosomes, liposomes, transferosomes, sphingosomes and ethosomes were prepared and evaluated. The uses of liposomes as a drug carrier system has certain limitations because of physical instability of the phospholipids used in the formulation. The extensive interest in use of niosomes as drug carrier requires the necessity of pharmaceutically acceptable procedure for the formulation and characterization of niosome vesicles (Mahmoud Hasan Teaima et al., 2020).

Niosomes as a novel nano-vesicular drug delivery system can enhance the solubility and

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Original Article

Extraction. Isoaltion, Purification,Stability Studies And Cytotoxic Studies Of Phycocyanin From Spiruline Culture

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Abstract

The aim of work is focus on Extraction. Isoaltion, putification of phycocynin from spirulina culture. In this method extraction was done by centrifuge process by using the buffer and saturated amonium sulphate, form crude extract purification done by using the ammonium sulfate extract using DEAE-Cellulose was used for anion exchange chromatography. The spectral charrecterzation was done by using IR,NMR and Mass Spectroscopy. Phycocyanin concentration and purity were determined by spectrophotometry using absorbance at 620 nm and 652 nm the purity was foune to be between 08-4.3 for diffent extractions like Crude extract ,Ammonium sulphate precipitation with 25% saturation ,Ammonium sulphate precipitation with 50% saturation, DEAE-cellulose-52. The stabilty studies for phycocyanin was perfomed ar different temperature and pH: 4 °C, 25 °C, and − 20 °C and pH: 5, 6, and 7.the phycocyanin content decreased to 15% at 25 °C, 83% at 4 °C, and 51% at − 20 °C. The most appropriate storage condition was 4 °C at pH 5. It was found that the most appropriate storage temperature at pH 6 was − 20 °C for better preservation of phycocyanin. We found that the most appropriate pH was 7, at − 20 °C. the cytotoxicity studies were performed for crude extract and crude Phycocyanin, pure phycocyanin were evaluated by the MTT assay against the HT-29 (colon cancer), MCF-7 (breast cancer) and DU-145 (prostate cancer) cell lines. Of all the three components tested against HT-29 cell lines, the pure Phycocyanin shows 135± 2 than the standard Methotrexate. Of all the three components tested against MCF-7 cell lines, the pure Phycocyanin shows 155± 3 than the standard Methotrexate. Of all the three components tested against DU-145 cell lines, the pure Phycocyanin shows 174 ± 2 than the standard Methotrexate. Based on the above results it concludes that the pure Phycocyanin shoes better cytotoxicity against the HT-29 (colon cancer), MCF-7 (breast cancer) and DU-145 (prostate cancer) cell lines.

Key words: *Spirulina,* phycocyanin, stability studies, cytotoxicity, MTT assay, Cell lines

INTRODCUTION

Spirulina is gaining attention due to its high nutritional value and extensive pharmaceutical applications. The correct identification of a certain species is a fundamental requisite for research study and/or developmental applications. The genus *Spirulina* has been incorrectly used to describe two different genera, *Spirulina* and *Arthrospira*. However, Stizenberger (1854) and Gomont (1892–1893) classified the forms with visible septa within the genus *Arthrospira*Stizenberger 1852; while coiled filaments with invisible septa were classified as belonging to the genus *Spirulina* Turpin 1829[1] The view of *Arthrospira*and *Spirulina* as two separate genera has been officially accepted by Bergey's Manual of Systematic Bacteriology [2-3]The separation between these two genera has been repeatedly affirmed on the basis of many other characteristics such as cell wall structure, helicity, trichome size, motility, gas vesicles, thylakoid pattern, GC analysis and phylogenetically using 16S rRNA. *Spirulina* is a photosynthetic autotrophic organism containing the blue pigment phycocyanin as the main photosynthetic pigment in addition to the green pigment chlorophyll *a,* which results in the blue-green color of the cells. *Spirulina* is one of multicellular unbranched non-heterocystous filamentous microalgae which are recognizable by the unique open left-handed helix along the entire length of the filament. the biochemical composition of *Spirulina* is highly dependent on growth conditions and the methods used for harvest and drying. In general, Capelli and Cysewski (2010)[4] reported that the amount of calcium in *Spirulina* is 1.8 times higher than that in whole milk, total protein is 6.7 times that of tofu, iron is 51 times greater than that of spinach and β-carotene is 31 times more abundant than in carrots. Therefore, *Spirulina* was given the label of 'super food' by The World Health Organization (WHO).

Based on the literature revire the present was focused on the extraction and isoaltion and purification of the phycocynin perform the charecterzation using IR,NMR ,Mass spectrosopy. And perform the purity content in extract using

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Meta Analysis of Various Drugs in the Department of Emergency Medicine

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ABSTRACT

Meta-analysis is the statistical technique that combines the findings of other results and outcomes from independent randomized comparable studies to improve, assess, maintain, promote, and modify health or health outcomes. Emergency drugs are used in life threatening conditions to save the life of the patient; these emergency drugs which have short onset of action for rapid effect mostly are injectables. The study was a Prospective, Retrospective study design in the department of Emergency medicine of tertiary care teaching hospital. This study was done in 300 patients who are admitted in the department of emergency medicine. This study was conducted for 6 months. In the study maximum number of patients reported in the emergency department was 61-70 years and the minimum were in the age group of 21-30 years in that mostly affected are male who are having habits of smoking and alcohol intake with educational level of mostly primary and the least are graduated and reasons for admission is mostly due to severe left ventricular dysfunction. The patients are mostly recovered from the emergency department and the very less are died and some are shifted to higher centres. For the recovery mostly the patients are treated with nitro-glycerine in the emergency department followed by amiodarone, adrenaline and minimum were treated with atropine and number of days stayed in the emergency department were maximum of <7 days and minimum were stayed 14 days and above. Our study concluded that most of patients admitted in Emergency department were due to several complications in health.

Introduction

Meta-analysis is the statistical technique that combines the findings of other results and outcomes from independent randomized comparable studies to improve, assess, maintain, promote, and modify health conditions of patients [1-3]. It is the statistical analysis of large collection of analytical results from individual studies for the purpose of integrating the findings. Authors of Meta analysis must sometimes make decisions based on their own judgment. However authors of meta-analysis require that these decisions are made public so they are open to criticism from other scholars.

Meta analysis is most easily performed with the assistance of computer data bases (Microsoft Access, Paradox) and statistical software (DSTAT, SAS) [4, 5]. Some people consider Meta analysis as conducting research about previous research; it is the compilation of results from a group of studies to arrive at an overall summary estimate of the drug effect, namely benefit or risk. Researchers should be aware that variations in sampling schemes can introduce heterogeneity to results which is the presence of more than one intercept in the equation. Example – For instance, if some studies used 30 mg of a drug and others used 50mg, then we would probably expect two clusters to be present in the data, each varying around the mean of one dosage with the other [6,7].

Functions of Meta analysis:

- ✓ Increase the statistical power to detect an effect
- ✓ Develop , refine(remove unwanted) and test hypothesis
- ✓ Identify heterogeneity in effects among multiple studies
- ✓ Calculate sample size for further studies

Steps to conduct Meta-analysis:

1. Define theoretical relationship
2. Collect the population studies to provide the data

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Research Article

Bioinformatics for health care

Design and Optimization of Floating Microspheres Using *Abelmoschus esculentus* Natural Polymer

Krishnaveni Manubolu[1], Sreenivasulu Munna[2] and Chandrasekhar Kothapalli Bonnoth[3]

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Abstract: The main objective of the present research study was to fabricate Vildagliptin floating microspheres by ionotropic gelation using natural polymer, Abelmoschus esculentus obtained from the fruits of Abelmoschus esculentus in combination with sodium alginate. Microspheres were prepared and optimized using central composite rotatable design model using design expert software version 12 .The study is focussed on the interaction effects of the three independent variables, natural polymer concentration, sodium alginate concentration and crosslinker concentration, optimization of formulations response surface methodology was used . drug –excipient compatibility studies were carried out by infrared spectroscopic studies. Infrared spectroscopic studies clearly shown that drug and excipients were compatible. Totally 15 formulations were generated taking 8 factorial points, 6 axial points and 1 centre point. Response surface methodology was used to optimize the formulations. To investigate the responses %cumulative drug release, floating time and floating lag time Response surface methodology was used. Polynomial equations and model plots of 3 dimensional model surface plots were generated. Vildagliptin optimized microspheres were formulated and a second order, model quadratic model was used to study influence of formulation factors on response variables. Experimental data of Statistical analysis exhibited good coefficient of regression for cumulative in vitro drug release. Regression F –ratios for the experimental variables were significant. The experimental values and predicted values are agreed. All fifteen formulations exhibited % yield of 94.35-99.99%, particle size of 124-441µm, %swelling index 64.52-89.65%, floating time of 10.16 to 13.16 and floating lag time of 30.31 to 46.98 sec. F4 formulation is optimized based on cumulative % in-vitro drug release at 2nd hour, 12th hour, floating lag time and floating time values. Predicted and observed results are in agreement of 95% confidence intervals. Based on investigation, RSM is the good tool for optimization of formulations.

Key words: Vildagliptin, floating microspheres, Abelmoschus esculentus, natural polymer, optimization, Response surface methodology

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Biological Evalution of (*Azadirachta Indica*) Neem Flower for Anthelmintic Activity on Earth Worm (*Pheretima posthuma*)

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Abstract:
The petroleum ether extract of Azadirachta indica flowers were investigated for anthelmintic activity using earth worms (Pheretima posthuma). Various concentrations of 10, 20, &40 mg/ml of flower extract were tested in the bioassay. Mebendazole 10mg/ml was used as reference standard drug whereas normal saline as a control. Paralysis time and death time of earthworms were recorded. Therefore, significant anthelmintic activity was found at the concentration of 40mg/ml. The results confirm that, the petroleum ether extract of neem flower possess anthelmintic activity. Thus, neem flower is also proved to be anthelmintic.

Key Words: Azadirachta indica, Anthelmintic activity, Pheretima posthuma, Mebendazole.

1. INTRODUCTION

An important plant that was used in herbal medicine is Azadirachta indica (meliacea). Neem tree is found in abundant in tropical and semi-tropical regions like India, Bangladesh, Pakistan and Nepal. It is a fast growing tree with 20-23m tall and trunk is straight and has a diameter around 4-5ft.Neem incudes active compounds such as Azadirachtin, nimbolinin, nimbin, nimbidin, nimbidol, salannin and quercetin. Neem therapeutically controls diseases like leprosy, intestinal helminthiasis, respiratory disorders, constipation and skin infections. Apart from these uses, neem is proved to have many various pharmacological activities – antioxidant, anticancer, antinflammatory and hepatoprotective effects, wound healing effect, antidiabetic, antibacterial, antiviral, antifungal, antimalarial, antinephrotoxicity, neuroprotective, immunomodulatory and growth promoting effect.

PLANT PROFILE

TAXONOMICAL CLASSIFICATION

KINGDOM	:	Plantae
CLASS	:	Dicotyledons
ORDER	:	Sapindales
FAMILY	:	Meliaceae
GENUS	:	Azadirachta
SPECIES	:	A. indica

2.MATERIALS AND METHODS

2.1 FLOWER COLLECTION

The flower of Azadirachta indica were collected from Nellore (Dist.) Andhra Pradesh.

2.2 FLOWER EXTRACTION

After the flowers were collected, they were washed with fresh water to remove the soil and adhered matters. Sufficient flowers were dried under the shade dried at room temperature then they were powdered using a grinding mixture to obtain a coarse powder and then passed through 40 mesh sieve. 25g of powdered drug of Azadirachta indica flower is taken using petroleum ether as a solvent of extraction via Soxhlet extraction technique maintained at a temperature of 40°c.

2.3 WORM COLLECTION

Indian adult earth worm (Pheritima posthuma) was used to study anthelmintic activity of flower extract. The adult earth worms are collected from Govt Vermicompost, Kodavaluru village, Nellore (Dist.), Andhra Pradesh, India. Worms with the length of 5-6cm and width of 0.2-0.3cm are utilized for the whole experiment. The earthworms obtained resembled with intestinal round worm parasites of human beings both anatomically and physiologically and hence were considered for anthelmintic activity.

2.4 PREPARATION OF TEST DRUG AND REFERENCE DRUG

Test samples for in-vitro study were prepared at concentrations of 10,20 and 40mg/ml and standard reference drug i.e menbendazole of 10mg/ml is to be prepared.

2.5 ANTHELMINTIC ACTIVITY:

Anthelmintic study of extract was carried out at concentrations of 10, 20 and 40mg/ml against the Indian earthworm (Pheretima posthuma) by affirming the method of Maheshwar G. Hogade. Five groups of Indian earthworms, each containing 5 earthworms approximately of equal size were used for the study. Three groups of earthworms were tested with extract of different concentrations (10mg/ml,20mg/ml,40mg/ml) and one group was treated with 10mg/ml with reference standard as Mebendazole and one group was used as a control which is treated with normal saline. The anthelmintic on earthworms was observed and time required for paralysis and death was recorded.

2.6 RESULTS AND DISCUSSION

The results from the table showed that, the petroleum ether extract of Azadirachta indica flower exhibits anthelmintic activity in dose dependent manner using Pheretima posthuma giving shortest paralysis and

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ORIGINAL RESEARCH PAPER

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INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

UTILIZATION AND EVALUATION OF SELECTIVE SEROTONIN REUPTAKE INHIBITORS(SSRI's) IN PSYCHIATRY PATIENTS OF SECONDARY CARE TEACHING HOSPITAL OF SOUTH INDIA

Pharmacy

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ABSTRACT

Selective serotonin reuptake inhibitors (SSRI's) are the most commonly prescribed antidepressants. They are mainly prescribed to treat depression. SSRI's are considered to be safer and generally cost effective when compared to some newer antidepressant classes. SSRI's acts by inhibiting the serotonin transporter (SERT) at the presynaptic axon terminal. A number of factors must be considered when evaluating SSRI's. An SSRI drug utilization study is performed for further evaluation. **Methodology:** The study was a prospective observational study on "Utilization and Evaluation of SSRI's in Psychiatry Patients", which was carried out in the 'Department of Psychiatry' in a Secondary care teaching hospital of South India. **Results:** Study the maximum number of patients was 786 and the age groups of 981 out of which maximum were of age group 46-54 and minimum were above 60, the female were more suffered in that maximum were married and the educational levels of the patients were mostly secondary, the hygienic conditions, surroundings and cleanliness were good. **Discussion:** Recent studies also found that mostly used SSRIs are Fluoxetine, Paroxetine, Citalopram and Sertraline. We found that in our hospitals the data reveals the status for some mostly used Fluoxetine as 386 (49.10%) and Paroxetine 288 (36.64%). **Conclusion:** Our study concluded that most of the patients suffered with psychological conditions and symptoms are considered. After using SSRI their overall effect in the patient health and outcome was observed with better outcome.

KEYWORDS

SSRI's: Selective Serotonin Reuptake Inhibitors, MMSE: Mini Mental Status Examination, DOCS: Dimensional Obsessive-Compulsive Scale, CTRS: Cognitive Therapy Rating Scale, DSM 5: Diagnostic and Statistical Manual of Mental Disorders, EPDS: Edinburgh Post-natal Depression Scale.

INTRODUCTION:

Selective Serotonin Reuptake Inhibitors: Selective serotonin reuptake inhibitors (SSRI's) are the most commonly prescribed antidepressants. They are mainly prescribed to treat depression, particularly persistent or severe cases, and are often used in combination with a talking therapy such as cognitive behavioural therapy (CBT).

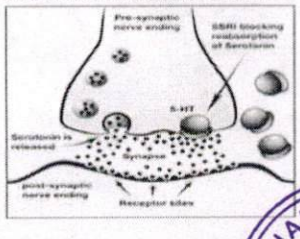
SSRI's are also used to treat a number of mental conditions including:

- Generalized Anxiety Disorder (GAD)
- Obsessive Compulsive Disorder (OCD)
- Associated disorders, Eating disorders (Bulimia)
- Post-Traumatic Stress Disorder (PTSD)

SSRI's can also be used to treat other conditions such as Premature ejaculation, Premenstrual syndrome (PMS), fibromyalgia and Irritable Bowel Syndrome (IBS). SSRI's are considered to be safer and generally cost effective when compared to some newer antidepressant classes.

Examples of SSRI's: The SSRI's approved by FDA are, Fluoxetine (Prozac), Paroxetine(Paxil, Pexeva) Sertraline (Sertraline), Fluvoxamine (Luvox, Luvox CR), Citalopram (Celexa), Escitalopram (Lexapro), Vilazodone

Mechanism of Action: Serotonin is a neurotransmitter that circulates in the brain and then absorbs into the bloodstream.



SSRI's acts by inhibiting the serotonin transporter (SERT) at the presynaptic axon terminal. Thereby SSRI's works by preventing blood from absorbing some of the serotonin from brain. This leaves a higher level of serotonin in the brain and increased serotonin can help relieve depression.

Pharmacokinetics: Administration: Co-administration with food would have an additional benefit in preventing the gastro-intestinal side effects associated with SSRI use. **Absorption:** SSRI's are rapidly metabolized by the liver. **Half-life:** The half-life of SSRI's varies across the different drug classes. Fluoxetine has the longest half-life (72-96hours).

MATERIALS AND METHODS:

Place of study: The study was carried out at a secondary care teaching hospital in south India

Study design: A Prospective observational study.

Study site: Psychiatry Hospitals include Narayana Hospital and other psychiatric hospitals.

Study population: A total number of 981 individuals was included in this study.

Study duration: One year

Study criteria: Individuals are enrolled in the study based on inclusion and exclusion criteria.

Inclusion criteria: The individuals, who are willing to give information, who are in the age group of 27- 60 and above 60,
who are suffered with psychiatry problems and the persons,
who are receiving treatment with selective serotonin reuptake inhibitors are includes in the study.

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ORIGINAL ARTICLE

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Acute toxicity studies of an novel natural polymer *vigna mungo* in swiss albino rats

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Keywords:

Vigna mungo,
A natural polymer,
Histopathology,
Safety,
Acute oral toxicity

ABSTRACT

The aim of the present research is to investigate acute toxicity profiling of isolated Vigna mungo new natural polymer. Safety administration is the primitive criterion for any drug substance. To explore the safety and toxicity profiling of the novel polymer, this study was carried out. Vigna mungo novel polymer was isolated from the pulverised seeds of Vigna mungo which is part and parcel of our diet. This polymer is obtained using a non-solvent extraction method using acetone. Acute toxicity studies were performed according to the OECD guidelines 420. In this, the selected animal model is Swiss albino rats, grouped into control and test containing each three animals. 2000 mg/kg of Vigna mungo polymer was administered to a test group and did not produced any abnormalities and behavioural changes. Furthermore, histopathological studies, body weight, haematological parameters did not presented abnormal values. The observations found 2000mg/kg of a dose of the polymer did not cause lethality and death of any animal till 14 days of a period. It was concluded that Vigna mungo novel polymer is safe to administer up to 2000mg/kg dose. Hence, the novel *Vigna mungo* polymer is safer for therapeutic use in pharmaceutical formulations.

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INTRODUCTION

Polymers are the backbone of drug delivery systems. These are the carriers of inert nature. Polymers alter the pharmacokinetics, pharmacodynamics properties of the dosage forms. Polymers are natural, synthetic and semisynthetic based on the source of origin. Many natural source origin polymers, especially proteins, polysaccharides used as carriers in the tissue engineering, targeting, and in bio response stimuli drug delivery systems (Gil and Hudson, 2004). These are used as binders, film formers, artificial organs linings, immunological testing, and as substrates for cell growth. Smart polymers are materials of choice in the dosage forms which undergo physical or chemical change in response to external stimuli. Hydrogels are the hydrophilic polymeric networks capable of taking a large amount of water or biological fluids (Qiu and Park, 2001).

Natural polymers are gaining popularity in the modern era due to biocompatibility, biodegradability,

ORIGINAL ARTICLE

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A Study on Extraction and Characterization of *Vigna mungo* Polymer

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Keywords:

Natural Polymer,
Vigna Mungo,
Non-Solvent,
Acetone,
Ethanol

ABSTRACT

The aim of work is to extract and characterize the *Vigna mungo* polymer solvent using acetone and ethanol. Natural polymers contribution towards formulation of dosage forms is appreciable as they are biocompatible, biodegradable and safe. So extraction and characterization of Vigna mungo polymer helps in the interaction studies of preformulation. In this present study, various physicochemical characters like phytochemical screening, viscosity, particle size analysis, and flow characteristics were determined. Further characterization performed using FTIR and XRD. Vigna mungo polymer obtained using acetone was taken into further studies of evaluation because of more product yield and less particle size. FTIR results revealed existence of carbohydrate nature. X-ray diffractogram presented degree of crystallinity 26.4%. And phytochemical screening of the extracted polymer indicated presence of mucilage and carbohydrates using ruthenium red and molisch's test. Statistical analysis of data was performed using two way ANOVA using Graphpad prism 5 software was used to compare Vigna mungo polymer extracted using acetone and ethanol. Physicochemical parameters experimental data found to be statistical significance two way ANOVA ($P < 0.05$).

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INTRODUCTION

Polymer is a macromolecule. It is comprised by rehashing the primary units associated by covalent substance bonds. Polymers are separated into engineered and regular polymers. Characteristic polymers are alluring atoms with more drug applications (Vishakha *et al.*, 2012). Plant inferred polymers have explicit applications in drug details including assembling of strong solid grid frameworks, inserts, films, dabs, miniature particles, and nanoparticles, inhalable and injectable frameworks. Natural polymers are biodegradable (Satturwar *et al.*, 2003). They are biocompatible, nonionic, economic, safe, without results and effectively accessible (Jani *et al.*, 2009).

Spatiotemporal arrival of medication in the definitions is made conceivable in current medication conveyance frameworks. Different hydrogels and other polymer based transporters gives, safe saturation through physiological areas. In this way, polymers are formed with medicaments to change transport or course half-life characteristics for targeting (Liechty *et al.*, 2010). This research outlines

Assessment of Urinary Complications and Drug Induced Effects in the Department of Urology in Teritary Care Teaching Hospital

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Abstract

Urology: The branch of medicine and physiology concerned with the function and disorders of the urinary system. It deals with disease of the male and female urinary tract i.e., kidneys, ureters, bladder and urethra. It also deals with male organs such as penis; testes; scrotum; prostate. The Urinary system consists of two kidneys, two Ureters and one Urethra.**Urology Department:** A urologist is a physician who specializes in diseases of the urinary tract and the reproductive system. It has seven sub specialist areas: 1.Pediatric Urology 2.Urological Oncology3. Renal Transplantations 4.Maleinfertility 5.Calculi 6. Female Urology 7.Neuro Urology.

Materials and Methods : Place of Study: The study "Assessment of Urinary Complications and Drug Induced Effects in Department of Urology in a Tertiary Care Teaching Hospital" which was carried in patient wards of "Urology Department" IP at Narayana Hospitals, Nellore, in collaboration with a 1440 bedded multidisciplinary teaching hospital.

Discussion: In our study, out of 510 patients 450 are willing to provide the information in which maximum are females 275(61.1%) and minimum were males 175(38.8%) **Conclusion**: Our study concluded that most of the people (or) patients in the urology department due to urinary complications were arised by using urology questionnaire and drug induced complaints are also estimated. Out of this the mainly some of the drugs are inducing urology problems in the patients. Some methods and surgical procedures are performed. It is cluster for the health care professionals and clinical pharmacist to reduce the patient in view of health condition in which, it is beneficial for the health outcome. Mostly, Clinical pharmacist should educate the patients regarding conditions and treatment to be effective.

***Key words**: Urinary Complications, hyperplasia, renal calculi, renal transplantation.*

Introduction

Urology: The branch of medicine and physiology concerned with the function and disorders of the urinary system. It deals with disease of the male and female urinary tract i.e., kidneys, ureters, bladder and urethra. [1,2]It also deals with male organs such as penis; testes; scrotum; prostate. The Urinary system consists of two kidneys, two Urethras and one Urethra [1]

Urology Department: A urologist is a physician who specializes in diseases of the urinary tract and the reproductive system.[3,4]

Assessment: It is the evaluation of the health status by performing a physical exam after taking a health

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Review Article

Effect of a novel coronavirus in human and its clinical diagnosis and implications by students of community pharmacy

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ABSTRACT

Coronavirus are coming under a broad family of virus that can cause respiratory illnesses such as the common cold, according to the centers for disease control and prevention (CDC). They are usual in many different species of animals, including camels and bats. Unusually, these corona viruses can evolve and infect humans and then spread between humans. Recent examples of this include SARS-CoV and MERS-CoV. 2019 Novel Corona virus (2019-nCoV) is a virus identified as the cause of an outbreak of respiratory illness first detected in Wuhan, China. In some cases, the viruses can cause lower-respiratory tract illnesses such as pneumonia and bronchitis. In human corona viruses are currently classified into seven types that are HCoV-229E, HCoV-OC43, HCoV-NL63, SARS-CoV, HKU1, MERS-CoV and 2019-nCoV. These two types of corona virus (MERS-CoV and SARS-CoV) are more dangerous. Some of corona viruses like HCoV-229E, HCo-OC43, HCoNL63 and HKU1 that are continuously circulate in the population of human and cause respiratory infections in human either may children and adults world-wide. They are generally transmitted between animals and humans through sneezing, coughing, touching or shaking hands and making contact with a surface or object. The symptoms of corona virus are sneezing, cough, fatigue, runny nose, sore throat, breathing difficulty and exacerbated. In more severe cases SARS, kidney failure, pneumonia and even death. Diagnosis can be carried out by healthcare provider in laboratory test on respiratory specimens and serum to detect human corona virus. For this virus no specific treatment like vaccines and antiviral drugs but symptoms can be treated.

Keywords: Coronavirus, Repurposing, Coagulopathy, Nasopharyngeal

INTRODUCTION

Corona viruses are a specific family of viruses, with some of them causing less-severe damage, such as the common cold, and others causing respiratory and intestinal diseases. A corona virus has many "regularly arranged" protrusions on its surface, because of which the entire virus particle looks like an emperor's crown, hence the name "corona virus".[1,2]

In the newly identified corona virus, a direct link with the disease has not been established yet. Previously, there was speculation that the mystery illness was related to the SARS epidemic in China in the latter half of 2002 that killed roughly 350 people.[3] Now, the new corona virus has been detected in over 15 cases so far. No deaths have been reported, nor has any case been reported of human-to-human transmission.

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Cost-effectiveness analysis of olanzapine and risperidone in schizophrenic patients in the Indian healthcare settings of Andhra Pradesh, India

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Abstract

Objectives The prevalence of schizophrenia in Andhra Pradesh, India is 279, and the crude disability-adjusted life year is 177 per 100 thousand people. It is one of the major mental health problems of the state. However, there is a dearth of information regarding the pharmacoeconomics of schizophrenia treatment. The purpose of this study was to evaluate the cost and effectiveness of the two most commonly used drugs olanzapine and risperidone for schizophrenia.

Methods A prospective observational study was carried out in a tertiary care teaching hospital (Department of psychiatry) for a period of 1 year among 124 schizophrenia patients. The data were collected in a specially designed patient data form, and the cost and effectiveness of the treatment were evaluated. Then, the ICER for olanzapine 71 and risperidone 53 users were calculated. Sensitivity analysis was run creating a model to identify uncertainties and its effect on the results.

Key findings The mean cost per patient for olanzapine was 89.96 USD, and risperidone was 85.56 USD for 8 weeks from the start of the treatment. The incremental effects and value of the treatment score with the Positive and Negative Syndrome Scale (PANSS) for olanzapine (27.33) were greater than that of risperidone (20.38). The cost (USD) per PANSS reduction for olanzapine was 3.29 and risperidone was 4.20. The overall incremental cost-effectiveness ratio (ICER) of olanzapine compared to risperidone was 0.63 USD/PANSS.

Conclusion The results showed that olanzapine was a cost-effective drug and an alternative to risperidone in the Indian healthcare settings. With further revision and validation, the cost-effectiveness outcome of olanzapine and risperidone can be used to inform any comprehensive healthcare financing mechanism in Indian healthcare settings.

Keywords Andhra Pradesh; cost-effectiveness analysis; olanzapine; pharmacoeconomics; risperidone; schizophrenia

Introduction

Schizophrenia is a mental disorder characterized by disruptions in thought processes, perceptions, emotional responsiveness and social interactions.[1] Schizophrenia causes huge economic burden to the individual patient, families and communities as a whole and affects the overall societal productivity.[2,3] The global prevalence of schizophrenia approaches one per cent, and the incidence is about 1.5 per 10 000 people.[4] In India, as per the Rangaswamy Thara et al. study, among the population of 100 000, the age-corrected prevalence rate of schizophrenia was 3.87/1000.[5] Other studies in India have reported prevalence of 0.7/1000 to 14.2/1000. There exists some variability in prevalence of schizophrenia in India as the studies are carried out in different geographical locations using different diagnostic criterion. A study by ICMR, SOFPUC, reported high prevalence of the illness among people who were living along, living in urban slums and unemployed.[6] The study also reported higher illness among male when compared to female.[7]

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Research Article

ANTIFERTILITY ACTIVITY OF *DECASCHISTIA CROTONIFOLIA* LEAF EXTRACT ON MALE RATS

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ABSTRACT

Objective: The objective was to investigate the male antifertility effect of *Decaschistia crotonifolia* leaf extract on male Wistar rats.

Methods: The animals were divided into three groups of five animals each. The first group (I) served as control and received normal saline, and remaining Groups II and III were treated with plant extract at a dose of 200 and 400 mg/kg p.o., respectively, for 21 days.

Results: Dose-dependent significant decrease in the weight of testes and epididymis was observed. Furthermore, a dose-related reduction in sperm count and motility was observed. A significant decrease in testosterone levels leading to infertility was also observed.

Conclusion: The 70% methanolic leaf extract of *D. crotonifolia* has produced dose-dependent antifertility effect on male rats.

Keywords: Male antifertility, *Decaschistia crotonifolia* leaf extract, Testosterone levels, Testes and epididymis.

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INTRODUCTION

Fertilization and control of overpopulation is a major quest in the modern era. Majority of people are facing problems such as infertility due to unremarkable reasons, and on the other hand, control of fertilization is also one of the targets of scientific community. Although a number of oral antifertility agents [1] are available in market, their usage is questionable due to their synthetic nature and a wide variety of side effects. Hence, a large number of population are migrating in a search for safe means of contraception. One of the most attracting and safest ways is using herbal medicine which is having a promising output with less or no side effects from the ancient times [2].

In the recent past, a majority of scientific and systemic investigations on herbal plants for their physicochemical and phytopharmacological properties including their antifertility activities are undertaken by researchers worldwide. As a part of contribution to the society, the present paper is focused on the research activity of *Decaschistia crotonifolia* for its antifertility activity.

D. crotonifolia is a widely grown plant in forests of Andhra Pradesh, Karnataka, Tamil Nadu, and Kerala. It belongs to the family Malvaceae, which is a shrub, growing at an height of 2 m [3]. A large source of wild plants possess a wide range of pharmacological uses, and hence, there is a need to explore uses of such plants to treat many diseases. An attempt was made to investigate antifertility potentials of *D. crotonifolia* as the investigations on this particular plant were very much limited.

MATERIALS AND METHODS

Plant material

D. crotonifolia leaves were collected from Talakona Forest, Tirupathi, and authenticated by botanist. The collected leaves were washed thoroughly in water and air-dried for 2 weeks at 35–40°C. Extraction was carried out in 500 ml of 70% methanol by soxhlation for 18 h using Soxhlet apparatus. The extract was concentrated under reduced pressure, dried, and stored in a desiccator.

Animals used

Healthy adult Wistar male rats (150–200 g) with proven fertility were marked and housed in polypropylene cages under a 12 h light and 12 h dark cycle. The experimental protocol was approved by the institutional animal ethical committee.

Experimental design

Animals were divided into three treatment groups containing five in each.

Group I - Animals in this group were treated as control and given distilled water alone for 3 weeks (21 days).

Group II - Animals in this group were treated as test I and given *D. crotonifolia* leaf extract at the dose of 200 mg/kg body weight p.o.

Group III - Animals in this group were treated as test II and given *D. crotonifolia* leaf extract at a dose of 400 mg/kg body weight p.o.

A suspension of extract was prepared in distilled water before administration. The required dose was administered orally with a syringe fitted with a feeding needle.

Sacrifice schedule

After their last dose at 21st day, the rats were weighed and sacrificed under light ether anesthesia.

Parameters monitored

Body and organ weights

The animals were weighed before and after the treatment schedule to note the initial and final body weights. The testes and epididymides were dissected out, freed from tissues and blood, and weighed.

Sperm count and motility

About 100 mg of each cauda epididymal tissue was minced in 1 ml of physiological saline. For sperm motility, one drop of evenly mixed

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Evaluation of Anti-fertility activity of *Decaschistia crotonifolia* leaves on female wistar rats

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ABSTRACT

Medicinal Plants were used from the ancient to the modern era and has proved in treating and preventing many different types of diseases which are not treatable with other means of treatment. The present study was aimed to prove the anti-fertility activity of *Decaschistia crotonifolia* leaves on female wistar rats. The extracts were mainly estimated for their anti-implantation activity by taking mainly 2 dose levels: 200 & 400 mg/kg, respectively. The extracts were also tested for their hormonal alteration effects on female wistar rats. The reports obtained in this study strongly prove the anti-fertility potential of leaves extracts of *Decaschistia crotonifolia*, as the extracts has shown a potential decline in the formation of implants (100%), and also the increase in uterine weight projects its estrogenic effect in Ovariectomised rats. Hence by considering the above-mentioned results, it may be proved that the leaves extracts of *D. Crotonifolia* poccess strong anti-fertility activity.

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INTRODUCTION

The explosion of the population has brought up the requirement for new, safe and pharmacologically effective contraceptive method. The Indian population is rapidly multiplying and has crossed more than one billion. Fertility control now, therefore, became a major threat for the economy of developing countries. Anti-fertility agents are those which are capable of terminating the pregnancy. Moreover, the synthetic anti-fertility methods available in the market have significant side effects and morbidity rates (Sharma *et al.*, 1983).

Hence it's an alarming time for mankind to think about the natural sources, which has been neglected from the past few decades for their safe and effective means of medical needs. A lot of recent past studies in the field the herbal research has promising results in treating many ailments (Hiremath and Rao, 1990).

D. Crotonifolia is a widely grown plant belonging to the family Malvaceae found in forests of Andhra Pradesh, Karnataka, Tamilnadu and Kerala. Which is a shrub, grows at the height of 2m (Prasad *et al.*, 1986). A large sources of wild plants possess a wide range of pharmacological uses, hence there is a need to explore uses such plants to treat many diseases. The present was an attempt made to investigate the