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ORIGINAL RESEARCH ARTICLE

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Tailored Non-ionic Surfactant Vesicles of Cyclosporine for the Treatment of Psoriasis: Formulation, *Ex-Vivo* and *In-Vivo* Investigation-Application of Box-Behnken Design

Peeyush Bhardwaj[1], Purnima Tripathi[2*], Sonia Pandey[3], Deepti Chaurasia[4] and Purushottam Ramchandra Patil[5]

[1]Department of Pharmacy, Bundelkhand University, Jhansi, U.P. 284128, India.
[2]B.S. Anangpuria Institute of Pharmacy, Alampur, Ballabgarh - Sohna Major District Road, Faridabad, 121004, Haryana, India.
[3]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur, U.P. 209217, India.
[4]Nkbr College of Pharmacy And Research Centre, Meerut, U.P. 245206, India.
[5]Government College of Pharmacy, Osmanpura, Aurangabad, Maharashtra, India.

***Correspondence to:** Purnima Tripathi, B.S. Anangpuria Institute of Pharmacy, Alampur, Ballabgarh - Sohna Major District Road, Faridabad, 121004, Haryana, India. Email: Tripathi.purnima@gmail.com

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Abstract: Psoriasis is an autoimmune skin disease characterized by hyperproliferation of keratinocytes. Topical delivery of drugs is mostly favored for the treatment of mild psoriatic conditions. But permeation of drugs across psoriatic skin is too complex. Niosomes are the non-ionic surfactant vesicles, reported to enhance dermal drug delivery. In the present work, cyclosporine niosomes were, formulated, optimized, and evaluated *in-vitro* to boost the dermal penetration of cyclosporine for the better management of psoriasis. Niosomes were developed using the thin film hydration method. Formulated niosomes were characterized and optimized for their percent encapsulation efficiency, size, and polydispersity index using Box-Behnken design. Optimized formulation was developed using cholesterol and span 60 (1:2.2), 30 minutes of hydration time, and 30 mg of cyclosporine. Niosomes' size, polydispersity index, and percent encapsulation efficiency were in the scale of 180.5 ± 11.16 nm, 0.156, and 93.2% ± 2.5%, respectively. The *ex-vivo* studies were carried out using excised goat skin. In the *ex-vivo* permeation experiments, though the percent drug permeated was low but the quantity

AGEs RAGE Pathways: Alzheimer's Disease

Authors
Shubhrat Maheshwari

Affiliations
Faculty of Pharmaceutical Sciences, Rama University, Kanpur, Uttar Pradesh, India

Key words
neurofibrillary tangles, AGEs, RAGE, Alzheimer disease, β-amyloid peptide

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Corresponding
Mr. Shubhrat Maheshwari, Assistant Professor
Faculty of Pharmaceutical Sciences, Rama University, Bithoor Road, Kanpur
209217 Uttar Pradesh
India
Tel.: +91 6399311040
shubhrat.maheshwari@gmail.com

ABSTRACT

Neurofibrillary tangles and plaques containing tau serve as the biological markers for Alzheimer disease (AD) and pathogenesis is widely believed to be driven by the production and deposition of the β-amyloid peptide (Aβ). The β-amyloid peptide (Aβ) that results from the modification of the amyloid precursor protein (APP) by builds up as amyloid deposits in neuronal cells. Thus, a protein misfolding process is involved in the production of amyloid. In a native, aqueous buffer, amyloid fibrils are usually exceedingly stable and nearly insoluble. Although amyloid is essentially a foreign substance made of self-proteins, the immune system has difficulty identifying and eliminating it as such for unknown reasons. While the amyloidal deposit may have a direct role in the disease mechanism in some disease states involving amyloidal deposition, this is not always the case. Current research has shown that PS1 (presenilin 1) and BACE (beta-site APP-cleaving enzyme) have – and -secretase activity that increases β-amyloid peptide (Aβ). Wealth of data has shown that oxidative stress and AD are closely connected that causes the death of neuronal cells by producing reactive oxygen species (ROS). Additionally, it has been demonstrated that advanced glycation end products (AGEs) and β-amyloidal peptide (Aβ) together increase neurotoxicity. The objective of this review is to compile the most recent and intriguing data of AGEs and receptor for advanced glycation end products (RAGE) pathways which are responsible for AD.

Introduction

The clinical appearance of neurodegenerative illnesses is determined by the increasing malfunctioning of particular groups of neurons. The characteristic of many neurodegenerative proteinopathies, extracellular and intracellular accumulation of misfolded proteins, is related with neuronal death. Advanced glycation end products, or AGEs, are a diverse class of molecules that are produced and amassed as a result of the process of advanced glycation. In conditions including diabetes, renal failure, inflammation, neurodegeneration, and ageing, AGE production is accelerated. Additionally, foods and cigarette products contain AGEs [1]. Therefore, AGEs disrupt vascular homeostasis through both endogenous production and exogenous consumption. In the first instance, AGEs can cross-link long-lived molecules in the basement membranes, such as collagens, resulting in "vascular stiffening" and processes that cause hyperpermeability and loss of structural integrity. Proteins, lipids, and nucleic acids that have undergone irreversible alteration by reducing sugars or sugar-derived compounds are collectively referred to as "advanced glycation endproducts" (AGEs) [2]. The Maillard reaction is the name given to the chain of chemical processes those results in the development of AGEs. Both the "browning" of food as it is being cooked and the "browning" of tissue that occurs with ageing are caused by the Maillard process [3]. Early glycation is the term for the initial chemical process in which a sugar is irreversibly bound by nonenzymatic means to amino acid groups on proteins, lipids, or nucleic acids [4]. They create Schiff bases, which can then be rearranged to create Amadori products, which are more stable [5]. The adduction of a carbohydrate to another biomolecule, such as a protein, lipid, or deoxyribonucleic acid, (DNA), is known as glycation. Glycation can happen enzymatically or without the use of enzymes. Glycation caused by an enzyme is known as glycosylation, such as when a glycosidic bond is created utilizing a sugar nucleo-

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HPTLC QUANTIFICATION OF THYMOL IN DIFFERENT EXTRACTS AND VOLATILE OIL OF *SAFOOF-E-MUHAZZIL*

Kamran Javed Naquvi*[1,2], S.H. Ansari[2], A.W. Siddiqui[1], Afrin Salma[3], Javed Ahamad[2,4]

[1]*Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur, Uttar Pradesh, India.

[2]Department of Pharmacognosy, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi.

[3]Translam Institute of Pharmaceutical Education & Research, Meerut, U.P.

[4]Department of Pharmacognosy, Faculty of Pharmacy, Tishk International University, Erbil, Kurdistan Region, Iraq.

*Corresponding author E -mail: kjnaquvi@gmail.com

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Key Words

Safoof-e-Muhazzil, Thymol, HPTLC, Obesity, Hypolipidemia

ABSTRACT

Safoof-e-Mohazzil (*SEM*), is a polyherbal formulation used by Unani physicians for treatment of obesity. The formulation consists of *Trachyspermum ammi* L., *Apium graveolens* L., *Nardostachys jatamansi* DC, *Rosa* × *damascena* Mill. *Origanum vulgare* L., and lakh maghsool. Thymol is one of the major active constituents of ajwain (*Trachyspermum ammi*). HPTLC quantification of thymol was done in volatile oil and different extracts of *SEM* for the quality standard purpose. Calibration curve of standard thymol (1mg/ml, 100-2000 ng/spot) was made. The samples were applied (2 - 4 µl) on HPTLC plate and developed using toluene: ethyl acetate, (93:7) as mobile phase. The plate was dried and sprayed with anasaldehyde-sulphuric acid reagent and heated at 105 ºC for 5 min. The plate was scanned at 513 nm in CAMAG HPTLC scanner. A spot of orange colour of R_f value 0.56 was observed in chromatogram of the different extracts of *SEM*. The amount of thymol in different extracts and volatile oil of *SEM* was calculated by using the regression equation (height, 45.37 + 0.3001* x, R^2 = 0.99788, Sdv = 5.14 %; area, 28.54 + 12.55* x, R^2 = 0.99716, Sdv = 6.92 %). The amount of thymol was found to be 4.428 ± 0.21 %, 1.267 ± 0.11 %, 0.303 ± 0.07 %, 0.243 ± 0.04 %, 1.883 ± 0.12 % and 0.889 ± 0.17 %, respectively in volatile oil, hexane, chloroform, acetone, methanol and hydro-alcoholic extracts of *SEM* on dry weight basis (w/w).

INTRODUCTION

The prevalence of obesity is increasing worldwide[1] resulting in an association with major health problems such as type 2 diabetes, ischemic heart diseases (includes angina, myocardial infarction, chronic post-ischemic cardiac failure, and sudden ischemic death), stroke, and cancer. It is necessary to treat obese individuals by both lifestyle interventions and/or pharmacological therapy[2].

Complementary and alternative therapies have long been used in the Eastern world but recently these therapies are being used increasingly worldwide[3]. Nature has been a source of medicinal agents for thousands of years, and an impressive number of modern drugs have been isolated from natural sources, many based on their use in traditional medicine. These plant-based traditional medicine systems continue to play an essential

ORIGINAL ARTICLE

Formulation Design and Characterization of Colon-targeted Mesalamine Microspheres and their Biodistribution Potential Study in Mice

N. R. Kar[1], S. C. Dinda[2]

[1]*School of Pharmaceutical Education and Research, Berhampur University, Bhanja Bihar, Berhampur, Odisha, India,* [2]*Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, Rama University, G. T. Road, Mandhana, Kanpur, Uttar Pradesh, India*

Abstract

Aim: The aim of this study is to design formulations of mesalamine microspheres (MMS) for the treatment of Crohn's disease and ulcerative colitis in the colon. **Materials and Methods:** Emulsification solvent diffusion method was employed for the preparation of MMS coated with Eudragit RS/ES-100 to prevent the drug release in the stomach. The prepared microspheres were characterized for surface morphology, drug entrapment efficiency, drug loading, and *in vitro* drug release study. **Results and discussion:** The micromeritic studies showed that the prepared microspheres had improved flowability. The result obtained was found in the desired ranges, where percentage yield ranging from 65.75% to 67.46%, drug entrapment efficiency from 83.02% to 86.42%, and mean particle size ranges from 6.99 μm to 15.37 μm. Scanning electron microscopy permitted a surface topographical analysis. From the biodistribution study, it can be observed that AUC_{0-t} of the microspheres was 2.63-folds greater than the solution ($P < 0.05$) in the colon. **Conclusion:** The study reveals that drug release was significant at pH 7.4 from the microspheres at colon region, so the drug will be better absorbed in colon and can be used for successful treatment of the Crohn's disease and ulcerative colitis.

Key words: Biodistribution study, drug release studies, emulsification solvent diffusion, mesalamine, microspheres

INTRODUCTION

Both local and systemic deliveries of drugs can take place at the site of the colon through colon drug delivery system, and it can prevent the release of drug in gastric and small intestine region and affect an abrupt onset of drug release of drug soon after the entry of colon.[1] Colon-targeted mesalamine microspheres (MMS) have to retard the drug release in the stomach and small intestine and to ensure maximum drug release colonic environment with an improved patient compliance and low side effects.[2] The oral route is reflected to be most suitable for drug administration to the patients. Depending on the physicochemical properties of the drugs, most of the oral administered conventional dosages form normally dissolves in the stomach or intestinal fluid. It is a serious drawback in conditions where localized delivery of the drugs in the colon is required or in conditions where a drug needs to be protected from the hostile environment of the upper gastrointestinal tract (GIT). Dosage forms that deliver drugs into the colon rather than upper GIT offer a number of advantages.[3] Colon-targeted drug delivery would ensure direct treatment at the disease site, lower dosing, and less systemic side effects. In addition to restricted therapy, the colon can also be utilized as a portal for the entry of drugs into the systemic circulation. Mesalamine used to treat a certain bowel disease (ulcerative colitis). It helps to reduce symptoms of ulcerative colitis such as diarrhea, rectal bleeding, and stomach pain and used to decreasing the swelling in the colon. Free mesalamine undergoes rapid and nearly complete systemic absorption from

Address for correspondence:
N. R. Kar, School of Pharmaceutical Education and Research, Berhampur University, Bhanja Bihar, Berhampur, Ganja, Odisha - 760007, India.
Phone: +91-9439511837.
E-mail: nihar_795@rediffmail.com

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Research Article

Formulation, Characterization, in vitro Anti-Tubercular Activity and Cytotoxicity Study of Solid Lipid Nanoparticles of Isoniazid

Bibhash Chandra Mohanta[1], Subas Chandra Dinda[2,3], Gitanjali Mishra[4], Narahari Narayan Palei[5], Vijayan Nynar Azger Dusthackeer[6]

[1]School of Pharmaceutical Education and Research, Berhampur University, Berhampur, Odisha, India.
[2]School of Health Sciences, Mekelle University, Mekelle, Ethiopia.
[3]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, Uttar Pradesh, India.
[4]Department of Zoology, Berhampur University, Berhampur, Odisha, India.
[5]Sree Vidyanikethan College of Pharmacy, Tirupati, Andhra Pradesh, India.
[6]Department of Bacteriology, National Institute of Research in Tuberculosis, Chennai, India.

Corresponding author. E-mail: bibhashmohanta@gmail.com

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DOI: 10.5101/nbe.v10i4.p379-391.

Abstract

The present study was aimed to develop and optimize isoniazid (INZ) loaded solid lipid nanoparticles (SLNs) for exploring in vitro anti-tubercular and cytotoxic activity. The INZ-SLNs were successfully prepared by high pressure homogenization followed by ultrasonication technique and optimized using 2^3 full factorial designs. INZ-SLNs were characterized for particle size (PS), zeta potential (ZP), entrapment efficiency percentage (EE%) and cumulative percentage drug release (CDR%). Physicochemical properties were investigated using transmission electron microscopy (TEM), differential scanning calorimeter (DSC), X-ray diffraction and Fourier transmission infrared spectroscopy (FTIR). The average PS, ZP and EE% of the optimized formulation were found to be 167.1 nm, −32.4 mV and 73.17% respectively. The optimized formulation showed a CDR of 79.14% up to 36 h. In vitro anti-tubercular (luciferase reporter phage (LRP) assay in H37Rv viable and resistant strain) and cytotoxicity efficacy (3-(4,5-dimethylthiazolyl-2)-2,5-diphenyltetrazolium bromide (MTT) assay in J774A.1 cells) of INZ-SLNs were evaluated and compared with free INZ. Results of LRP assay in H37Rv strain showed that percentage reduction in relative light unit (RLU) for INZ-SLNs and free INZ were 99.75 and 99.898% respectively, whereas in case of INZ resistant strain they were found to be 90.27 and 90.52% respectively, confirming notable antitubercular activity. MTT assay revealed that the percentage of cell viability upon exposure with INZ-SLNs was significantly higher (> 90%) than free INZ (< 80%), confirming its safety. Thus, INZ-SLNs could be an effective dosage form with sustained drug release profile, significant anti-tubercular activity, and reduced normal cell toxicity for achieving better therapeutic activity.

Keywords: Isoniazid; SLN; In vitro drug release; Luciferase reporter phase assay; MTT

Phytochemical analysis and simultaneous quantification of quercetin and gallic acid in *Ipomoea carnea* Jacq. through HPTLC

Anant Kumar Srivastav[1*], Shikhar Verma[2], Himani Awasthi[1], Santosh Kumar[1], Dharmendra Yadav[1], Rajni Devi[1], Alok Kumar Srivastava[1], Madhaw Dwivedi[1], Anurag Singh[3], Anurag Kumar[4]

[1]Hygia Institute of Pharmaceutical Education and Research, Ghaila Road,Balrampur, Lucknow, Uttar Pradesh 226020, India.

[2] Maharishi School of Pharmaceutical Sciences, IIM Road, Indrapuri Colony, Diguria, Aziz Nagar, Lucknow, Uttar Pradesh 226013.

[3]Goel Institute of Pharmacy and Sciences, Anora Kala, Faizabad Road, Near Indira Canal, Uttar Pradesh, 226028.

[4]Rama University Kanpur.

Abstract:

Ipomoea carnea commonly known as beshram or pink morning glory have several bioactive compounds of therapeutic needs as indicated through several peaks obtained and represented through chromatogram. Aim and objectives: Objective of this study is to investigate the presence of bioactive compounds (Phytochemical profiling) along with quantification of quercetin and gallic acid. Methods: HPTLC analysis of *Ipomoea carnea* test samples extracted from n-hexane (sample 1) and hydro-alcohol (1:1, v/v) (sample 2) extract reveals information for the presence or absence of Quercetin and gallic acid. The phytochemical profile of plants was determined and presented in the figures and tables showed the total number of peaks, peak height, peak area and Rf values. Result: CAMAG HPTLC analysis reveals the absence of quercetin and gallic acid in plant samples. Importance of this research is to set the further research of other flavonoids to set the flavanoidal actions of *I. carnea.*

Keywords: *Ipomoea carnea*, HPTLC, Chromatogram, Quercetin, Gallic acid.

Introduction

Weeds are plants that don't have specific requirements with respect to climatic condition, nutrients and space. They grow at disturb and inhabited places [1]. Biodiversity of a plant community adversely affected by the invasive plant species like *Ipomoea carnea Jacq.* popularly known as beshram, behaya, morning glory, perennial pantropical dicot shrub with milky juice (family: convolvulaceae) mostly at riverbank, canal and water drains and all over the world has become economic and ecological disaster for the water bodies by blocking water flow [2-6].This inhibitory effect of *I. carnea* associated with its allelopathy nature that affects the growth of adjacent species of plant [7-11]. Traditionally leaves of *I. carnea* used in the treatment of wounds healing [12-13]. Anti-inflammatory, antioxidant, anti-bacterial activity, muscular pain, swelling stomach ache, nodules in breast [14-15]. Preliminary qualitative phytochemical screening of *I. carnea* reveals presence of phenolic compounds, terpenoides, flavonoids, and steroids, some of them have antioxidant and antimicrobial activity [16]. The WHO has recommended researchers for scientific validation of herbal drugs for acknowledging sound science and nowadays there are several new technologies made possible for identification, screening and isolation of these active compounds [17-18]. HPTLC is a commonly used method for quantitative and qualitative estimation of several markers in plant

A Review on Taxonomical Classification, Phytochemical Constituents and Therapeutic Potential of *Ficus religiosa* (Peepal)

Priya Tiwari[1], Subas Chandra Dinda[1], Vaseem Ahamad Ansari[2]*, Tarique Mahmood[2], Farogh Ahsan[2]

[1]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur (U.P.), India 209217

[2]Faculty of Pharmacy, Integral University, Lucknow (U.P.), India 226026

*Corresponding Author E-mail: **vaseem9in@gmail.com**

ABSTRACT:

Plant materials found to help the human for their survival in several ways by providing food, shelter, cloth, and medicines. *Ficusreligiosa* is commonly known as Peepal found to play a role in combination several diseases in traditional practice. It's a large evergreen tree and throughout the India. Ficusreligiosa is known to be a native Indian tree. It is a familiar sight in Hindu temples, Buddhist monasteries and shrines, villages and at roadsides. It is known to be a sacred plant in India and since ancient times it is widely being used to treat various ailments. It has been extensively used in traditional medicine for a wide range of ailments of the CNS, GIT, reproductive system, endocrine system, respiratory system and infectious disorders. The present review is an attempt to provide a detailed botanical description, classification, Phyto-chemical study, Pharmacological properties of the plant. The various parts of the plants such as stem, bark, fruits, buds, latex are used to treat different diseases such as dysentery, mumps, jaundice, heart diseases, constipation, skin diseases, etc. According to Ayurvedic system of medicine, *F. Religiosa* (Peepal tree) is well known to be useful in diabetes. Since last couple of years it has also been investigated for the presence of various phyto-constituents belongs to (phenolics, sterols and flavonoids groups).

KEYWORDS: *Ficus religiosa*, Anti-diabetic, Pharmacognosy, Phytochemistry, medicinal applications, Pharmacological Significance.

INTRODUCTION:

In spite of great advances of modern scientific medicine, traditional medicine is still the primary form of treating diseases of majority of people in developing countries including India; even among those to whom western medicine is available, the number of people using one form or another of complementary of alternative medicine is rapidly increasing worldwide. Increasing knowledge of metabolic process and the effect of plants on human physiology has enlarged the range of application of medicinal plants. Herbal medicines are of great impotance to the health of individuals and communities, but their quality assurance need to be developed. During the last decade, the use of herbal medicine has been increased. Consequently, an increase in traditional tread in herbal medicines and other type of traditional medicines has occurred.

Proper use of these different types of medicines has therefore become a concern. In recent years, the use of herbal medicines worldwide has provided an excellent opportunity to India to look for therapeutic lead compounds from an ancient system of therapy, i.e. Ayurveda, which can be utilized for development of new drug. *Ficusreligiosa* (belonging to family Moraceae), commonly known as Peepal, is the most popular member of the genus Ficus[1]. *F. religiosa*.is a large perennial tree, glabrous when young, found throughout the plains of India up to 170 m. In the Himalayas, largely planted as an avenue and road side tree. It is one of the longest living trees of the world[2]. Peepal is native to India, Bangladesh, Pakistan, Nepal, Sri Lanka and China. In Ayurveda, *F. religiosa* belongs to a class of drugs called rasayana. Rasayana[3] are rejuvenators, antioxidants and relieve stress in the body[4].

In medicinal field, *F. religiosa*[5] is gaining great attention because of around most phyto-constituents. Various studies indicate that *Ficus religiosa* are widely used in the management of many types of diseases like Respiratory disorders, sexual disorders, central nervous system disorders (CNS), cardiovascular disorders (CVS), gastric problems, skin infections and diabetes & many more. The genus *Ficus* (Moraceae)[6] constitutes one of the largest genera of angiosperms includes with more than 800 species and 2000 varieties of *Ficus* genus, occurring in most tropical and subtropical forests worldwide**.** It is sometimes also called kalpruksha[7]**.**

Mythological Significance of Ficus Tree:

Trees are the best nature's greatest gift they are worshipped in each and every religion as a matter of gratitude. Puranic Literature divides [illegible] into seven concentric islands. All these islands are named after trees or plants in Sanskrit[8].

The seven island

1. Jaba [illegible]

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Original Article

Preliminary phytochemical screening of bark (powder) extracts of *Ficus religiosa* (peepal) plant

Priya Tiwari* and Rishikesh Gupta

Faculty of Pharmaceutical Sciences, Rama University, Kanpur, India
Institute of Pharmacy, Bundelkhand University, Jhansi, India

Keywords: Peepal, *Ficus religiosa*, Alkaloids, Flavonoids and Phytochemical

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ABSTRACT: The traditional medicine involves the use of various different plant extracts or the bioactive constituents. The study such as ethno medicine keenly represents the best avenues in searching new economic plants for medicine. This type of study gives the health application at affordable cost. The present study carried out to find out the phytochemical constituents in the *Ficus religiosa* bark. The *Ficus religiosa* was collected from the Rama University Campus. The shadow dried bark materials were grained and extracted with petroleum ether, chloroform, methanol and ethanol: water (50: 50). Photochemical analysis was carried out according to standard procedures. The bark powder was successively extracted with Phytochemical screening shows the presence of carbohydrate, glycoside, alkaloid, protein, amino acid, phytosterol, tannin & flavonoids. The result of the study could be useful for description and phytochemical analysis of the plant.

⇑ Corresponding author at:
Priya Tiwari, Faculty of Pharmaceutical Sciences, Rama University, Kanpur, India
E-mail: tiwari93priya@gmail.com

INTRODUCTION

Peepal (*Ficus religiosa*), is a large tree in "Moraceae" family, traditionally used in treatment of various types of diseases like (diabetes, menstrual disorders, washing ulcers, leucorrhoea, erysipelas, antibacterial and antifungal)[1]. The present study was carried out to investigate the phytochemical profile of bark of *Ficus religiosa*[2,3]. The bark powder was successively extracted with petroleum ether, chloroform, methanol and ethanol: water (50: 50). Phytochemical analysis shows the presence of carbohydrate, glycoside, alkaloid, protein, amino acid, phytosterol, tannin & flavonoids[4]. The result of the present study could be useful for description and foundation of monograph of the plant.

The Pharmacognostical studies are one of the major criteria for identification of herbal drugs from plants. Medicinal plants form a large group of economically important plants that gives the basic raw materials for indigenous pharmaceuticals[5-7]. One approach to the discovery of new drugs is the study of the bioactive constituents of higher plants.

The investigation of plants used as remedies in the traditional folk medicine can be an interesting tool to identify several biologically active molecules from the 250,000 higher plant bioactive constituents with antiinflammatory, analgesic, antipyretic and anti-ulcerogenic activity[8-10]. *Ficus religiosa* (*F. religiosa*) commonly known as peepal is a very big sacred tree and found throughout India in the vicinity of temples.

MATERIALS AND METHOD:

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Formulation and Evaluation of SR Tablets of Anti-diabetic drug Gliclazide

Priya Tiwari*
Faculty of pharmaceutical sciences Rama University Mandhana Kanpur, up (209217) Lucknow (U.P.), India.

ABSTRACT

Recent advances in Sustained Release Drug delivery System (SRDDS) aim to enhance safety and efficacy of drug molecule by formulating a convenient dosage form for administration and to achieve better patient compliance. This present study showed that the Gliclazide is an oral hypoglycemic (anti-diabetic drug) and is classified as a sulfonylurea. Its classification has been ambiguous, as literature used it as both a first generation and second generation sulfonylurea. Gliclazide was shown to protect human pancreatic beta-cells from hypoglycemia-induced apoptosis. It was shown to have an anti-atherogenic effect (preventing accumulation of fat in arteries) in type II diabetes. Gliclazide is used in the tablet form for antidiabetic effect.

Keyword: Gliclazide, Sustained release tablet, Pharmacokinetic study, diabetes, GLI, glipizide.

*Corresponding Author Email: vjpratap.asr@gmail.com
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COLON SPECIFIC DRUG DELIVERY SYSTEM: AN APPROACH TO TARGET COLONIC DISEASES

Nihar Ranjan Kar [*1] and Subas Chandra Dinda [2]

School of Pharmaceutical Education and Research (SPER) [1], Berhampur University, Bhanja Bihar, Berhampur, Ganjam - 760007, Odisha, India.
Department of Pharmaceutics [2], Faculty of Pharmaceutical Sciences, Rama University, Rama City G. T. Road, Mandhana, Kanpur- 209217, Uttar Pradesh, India.

Keywords:

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pH, Target site, Local delivery

Correspondence to Author:
Nihar Ranjan Kar

PhD Research Scholar,
School of Pharmaceutical
Education and Research (SPER),
Berhampur University, Bhanja Bihar,
Berhampur, Ganjam - 760007,
Odisha, India.

E-mail: nihar_795@rediffmail.com

ABSTRACT: Drug as such, may not show the desired therapeutic effect; drug delivery is the method or process of administering a pharmaceutical compound to achieve a therapeutic effect in humans or animals. Targeted drug delivery into the colon is highly desirable for local treatment of a variety of bowel diseases such as ulcerative colitis, Crohn's disease, amoebiasis, colonic cancer, local treatment of colonic pathologies, and systemic delivery of protein and peptide drugs. Colon targeted drug delivery system (CTDDS) can deliver drugs as both local and systemic. Local delivery, in the treatment of inflammatory bowel disease (IBD). Treatment could be enhanced when drug delivered to the target site on the colon. Systemic side effects could also be reduced. Colon-specific systems are the most important delivery of those drugs which are normally inactivated in the upper parts of the gastrointestinal tract (GIT). Primary approaches for CTDDS (Colon Targeted Drug Delivery System), which includes prodrugs, pH and time-dependent systems, bacterial enzyme dependent colonic DDS and pH and bacterial enzyme dependent colonic DDS. The novel approach of CTDDS, which includes pressure controlled colonic delivery capsules (PCDCS), osmotic controlled drug delivery are specific techniques.

INTRODUCTION: The oral route of medication administration is the most advantageous and imperative technique for regulating drugs for systemic effect. About half of the medication conveyance systems accessible in the market are oral medication conveyance system, and these systems have more points of interest because of patient acceptance and simplicity of organization.

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Colonic medication conveyance has increased expanded significance not only for the conveyance of the medications for the treatment of nearby ailments related to the colon like Crohn's illness, ulcerative colitis, irritable bowel syndrome.

Advantages of CDDS:

- Colon is an ideal site for the delivery of agents to cure the local diseases of the colon.
- Local treatment has the advantage of requiring smaller drug quantities.
- Reduces dosage frequency. Hence, the lower cost of expensive drugs.
- Possibly leading to a reduced incidence of side effects and drug interactions.

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Original Article

Formulation and *in vitro* Characterization of Metronidazole Loaded Polymeric Microspheres for Colon Specific and Sustained Drug Delivery

Nihar Ranjan Kar[1,*], Subas Chandra Dinda[2]

[1]School of Pharmaceutical Education and Research, Berhampur University, Berhampur, Odisha, INDIA.
[2]Faculty of Pharmaceutical Sciences, Rama University, Rama City, G.T. Road, Mandhana, KANPUR, Uttar Pradesh, INDIA.

ABSTRACT

Objective: Metronidazole stacked alginate microspheres have been utilized to drag out the gastric living arrangement time and enhance the neighbourhood impact of medication in the district of colon for the treatment of bacterial contaminations by expecting that the colonic microbes will enzymatically corrupt the polysaccharide into natural corrosive and by bringing down the pH condition with the goal that disintegration of corrosive dissolvable covering and arrival of medication occur at the same time. **Methods:** Metronidazole microspheres were made by ionic gelation method utilizing Guargum, Chitosan, Eudragit S-100 and sodium alginate at various proportions and utilized calcium chloride (4% w/v) as rigidizing operator. Microspheres were described for its molecule measure, medicate stacking, tranquilize capture, swelling file and medication discharge properties. **Results:** Microspheres are observed to be inside size extents from 36.77µm to 229.96µm with medication capture proficiency of 42–99% w/w. The microsphere kept up to maintain the medication discharge up to 12 h if there should be an occurrence of definition FG4. Medication discharge from the microspheres, swelling file and lightness establishes to be relies upon the grouping of chosen polymers in the polymer mixture. Definitions containing low groupings of Guargum, Chitosan, Eudragit S-100 and sodium alginate (1:1) demonstrating shorter drifting slack time and quicker medication discharge and the other way around. Accordingly, swelling record and rate of medication discharge seemed, by all accounts, to be balanced by the centralization of chose polymers in the polymer mix. The outcomes demonstrated that Glutaraldehyde (1ml) based upgraded plan FG4 could be helpful in the detailing of metronidazole microspheres for better treatment of bacterial contaminations in colon.

Key words: Metronidazole, Microspheres, Swelling index, *in-vitro* drug release, Sustained release, Colon specific.

Correspondence
Mr. Nihar Ranjan Kar
School of Pharmaceutical Education and Research Berhampur University, Bhanja Vihar, Berhampur- 760007, Ganjam, Odisha, INDIA.
Phone no: +91-9439511837
E-mail: nihar_795@rediffmail.com
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INTRODUCTION

Microspheres with molecule measure ranges from 1 to 1000 µm in width and it is a microparticle medicate conveyance framework.[1-3] As microspheres are simple regulated, so it is planned into single-unit measurements frames like filling them into hard gelatin containers or might be tablets.[4] Metronidazole is dissolvable in pH 1.2, pH of the terminal ileum and colon at pH 6.8 and pH 8.[5] The significant system of activity of Metronidazole to murders the trophozoites situated in the colon due its amoebicidal movement. Along these lines, assembling of metronidazole microspheres is required to exemplify the medication with appropriate pH reliant and deferred the arrival of medication at the site of colon at lower pH. Another issue related with the medication is its intense taste, which may prompts persistent resistance. Alginates utilized as colonic medication transporter and at colonic greenery it indicates nontoxicity,[6] biocompatibility[7] and biodegradability[8] and separated from these it additionally having defensive impact on the mucous layers of the upper GIT.[7] As dried alginate dots demonstrating swelling conduct at pH 7.4, so it shields the corrosive touchy medication from gastric squeeze and utilized for controlled discharge framework.[8] Sodium alginates utilized as a focusing on material for starch receptors (polysaccharide) present in the pimple mass of *E. histolytica* contains glycoproteins and focus on the arrival of medication at the site of contamination. Metronidazole is an immediate luminal amoebicidal tranquilize utilized securely and more powerful when contrasted with other luminal amoebicidal drugs.[9-11] The point of the present work was to plan and *in vitro* portrayal of metronidazole stacked polymeric microspheres for colon-particular and supported medication conveyance for the compelling treatment of amoebiasis.

MATERIALS AND METHODS

Materials

Metronidazole (MTZ) was obtained as a gift sample from Albert Devid Ltd., Kolkata, India. Guargum, Chitosan, Eudragit S-100 and Sodium alginate were purchased form Merck Specialities Private Limited, Mumbai. All other chemicals were used are of analytical grade.

Method

Method of preparation of microspheres

Microspheres were set up by ionic gelation method. Here, required measure of polymers, for example, guar gum, chitosan, Eudragit S-100 were scattered in a predefined volume of chilly water containing the medication and permitted to swell for 2 h. In another measuring glass reasonable measure of sodium alginate was taken and blended well with 10 ml of water. The polymeric arrangement containing the medication was added to sodium alginate arrangement with mixing to create a thick suspension. After total blending 1.0 ml of glutaraldehyde were added to the above scattering, trailed by consistent mixing at a speed of 500rpm. At that point polymermeric sedate arrangement was included drop astute by utilizing syringe with needle of 22 G in measurement from a tallness of around 5 cm into a container containing 4% w/v arrangement of calcium chloride with ceaseless blending by attractive stirrer. At that point the arrangement containing the framed microspheres was sifted by utilizing What man channel paper no-1. The microspheres were permitted to dry at around 30 to 40°C and put away in very much shut compartment for further examinations.[12,13]

REVIEW ON HYPOXANTHINE GUANINE PHOSPHORIBOSYL TRANSFERASE (HGPRT)

Preeti Verma[1], [2]* Peeyush[1], [2] Yatendra Singh[1, 4] Anurita Rajpoot[3].

[1]Adarsh Vijendra Institute of Pharmaceutical Sciences, Shobhit University Gangoh, Saharanpur (U.P.), India 247341.

[2]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur (U.P.), India 209217.

[3]Advance Institute of biotech and paramedical Sciences, Naramau, Kanpur, (U.P), India 209217.

[4]Maharana Pratap College of Pharmacy, Mandhana, Kanpur (U.P.) 209217.

Abstract

Hypoxanthine-guanine phosphoribosyl transferase (HGPRT) is a purine salvage enzyme that shows significant role in regulation of purine metabolism in human. HGPRT has been produced to give a creature model to the infection of Lesch-Nyhan disorder. The commonness of Lesch–Nyhan ailment is unsurprising to be roughly 1/380 000 live births, making it quite rare. Ordinarily, influenced patients have a typical pre-birth and perinatal course followed by advancement of signs for the most part inside 3–6 months. The hereditary condition Lesch-Nyhan disorder, which is brought about by a protein hypoxanthine phosphoribosyl transferase (HPRT) deficiency is characterized by behavioural changes, including self-injurious behavior and intellectual retention [1].The current-considers were led to portray the results of the transformation on the declaration of HPRT and to describe potential changes in cerebrum purine content in these freaks. These outcomes demonstrate that the freak creatures have no noticeable HPRT-immunoreactivity material on western marks and no perceptible HPRT chemical movement in cerebrum tissue homogenates, Several various changes have been distinguished all through the coding area, however without exact data on the HPRT protein'3D dimensional structure, it remains difficult to determine any consistent correlation between the Structure and function of the enzyme. Selective inhibition of the enzymes HGPRT of parasite vs human are likely to be required as one of novel approach for treatment of malaria. In the present study, designing and virtual screening of PFHGPRT inhibitors could help in guiding medicinal chemists to improve target specificity for antimalarial chemotherapy.

Keywords- Hypoxanthine-guanine phosphoribosyl transferase, Lesch-Nyhan disease, Purine metabolism, antimalarial, 3D structure of HGPRT.

1 Introduction

Purines are fundamental particles for every single living life form. Hypoxanthine guanine phosphoribosyl transferase (HGPRT) is vital for purine nucleotide as it catalyse the transformation of 6-oxopurine bases to their individual nucleotides [hypoxanthine to inosine monophosphate (IMP) and guanine to guanosine monophosphate (GMP) from the purine bases hypoxanthine and guanine separately, using 5'- phosphoribosyl-1-pyrophosphate as a co-substrate], and henceforth basic in Plasmodium falciparum just as in human for nucleic corrosion [2, 3].Purine containing nucleotides are the building blocks of nucleic acids (DNA

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Review Article

Importance of Herbal Antioxidant in Management of Parkinson's Disease

YATENDRA SINGH*[1, 2], MADAN KAUSHIK[1], PREETI VERMA[1, 3], PEEYUSH[1, 3]
[1]Adarsh Vijendra Institute of Pharmaceutical Sciences, Shobhit University Gangoh, Saharanpur (U.P.) 247341
[2]Department of Pharmacology, Maharana Pratap College of Pharmacy Mandhana, Kanpur (U.P.) 209217
[3]Faculty of Pharmaceutical Science, Rama University, Kanpur (U.P.) 209217
*Corresponding Author
Email ID: yatendra.chandel@gmail.com
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ABSTRACT
Parkinson's disease (PD) or paralysis agitans, is disorder of extrapyramidal system which is manifested by shortage of chemical messenger 'dopamine' in the basal ganglion. Generally, it affects I in 200 elderly population. Clinical Features of the disease is mostly due to continuous degenerative loss of nigrostriatal dopaminergic neurons. In PD dopaminergic cells die in Substantia nigra and Corpus striatum due to involvement of genetic vulnerability, environmental factors, proteosomal dysfunction and oxidative stress, most of which have yet to be identified. Pathogenesis of this syndrome is not clearly established and it is incurable in present. The current symptomatic treatment has failed to improve the life of PD patients. New therapeutic approaches is required to stop the disease progression. Oxidative stress is one of the major factors that are responsible for worsening the symptoms of PD. None of the current drug regimens can stop this oxidative stress. Herbal antioxidants has proven its effectiveness in PD by suppressing oxidative stress. This review examines the currently published literature on the utilization of natural herbal bioactive molecule on the management of PD along with involvement of oxidative stress in pathogenesis of PD.

Keywords: Parkinson's disease, Herbal antioxidant, Oxidative stress, Dopamine

INTRODUCTION
Parkinson's disease (PD) is generally referred as neurodegenerative and movement disorder. Depletion in dopamine level is principal factor which is responsible for its progression. Substantia nigra and Corpus striatum are unable two work properly due to insufficient level of dopamine [1]. The chief symptoms are tremor in hands, muscular rigidity, and reduction in voluntary movements and improper cognition [2].

PD is inferred to be developed majorly by environmental toxins, formation of reactive oxygen species, inflammation and head trauma. Extraordinary neuroinflammation which is triggered by reactive oxygen species has been documented in dopaminergic nerve ending of Substantia nigra and Corpus striatum in the person with PD. Neuroinflammatory mediator such as neurotoxins and cytokines is responsible to degrade Substantia nigra and Corpus striatum dopaminergic neurons [3].

Contemporary research conclusion clearly indicates that extra attention is required to explore involvement of reactive oxidative species (ROS) in pathophysiology of PD [4, 5]. Actually, over production of free radicals is one of the most important pathogenic factor which also responsible for nerve cell death [6, 7].

In modern medicine there is only symptomatic treatment is available for PD. Modern medicine is clearly fails to cure PD [8]. Almost all modern medicine targets dopamine which is having some major side effects. Sometime this treatments is fatal for life of patients [10]. Damage to the mitochondria and defective oxygen radicals developments are key factor which give researcher a new insight to develop newer Antiparkinson regimen with minimal toxicity [11]. Initial stages Parkinson's disease (PD) develops very slowly. After few year when its symptoms come then it is too late to medical practitioner to cure the patient. In later days of life it develops drastically. In some herbal plants are available which are very effective to manage PD in early stages when it is as food supplements [10, 11].

Numbers of plants mention in Indian traditional literature which are very effective to PD. Till date research review is not available which cover ancient

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PHYTOCHEMICAL STANDARDIZATION OF POWDERED MIXTURE OF *FICUS RELIGIOSA* LEAF & BARK

TIWARI PRIYA[1*], OJHA SAKSHI[2]

Affiliation:
[1]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, UP, India
[2]Modern College of Pharmacy, Jhansi, UP, India

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Corresponding Author:
Priya Tiwari, Faculty of Pharmaceutical Sciences, Rama University, Kanpur, UP, India. E-mail: tiwari93priya@gmail.com

ABSTRACT

To evaluate various standardization parameters of powdered mixture of Ficus religosa leaf and bark. Method: Physico-chemical tests such as foreign organic matter, ash and extractive values, moisture content and fluorescent analysis as well as preliminary phytochemical analysis were used to evaluate the quality control parameters. Results: Physico-chemical constants such as foreign organic matter, ash and extractive values, moisture content and fluorescent analysis were established. Phytochemicals like alkaloid, steroids, flavanoids and tannins were found to be present in the extracts. Conclusion: Proven standardization parameters have a key role in identifying and authenticating the right plant material in the present research.

INTRODUCTION

It has now become common knowledge that herbal medicines are completely safe and have no side effects. 80% of the world's population is still relying on herbal medicines to treat illness, according to the WHO 2002 survey. In the current scenario, demand for herbal products is rising exponentially across the globe, and leading pharma companies are constantly

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Research Article
Role of *Rosa damascena* Mill. Flowers in the Treatment of Obesity and Obesity-Related Disorders

[1,2]Kamran Javed Naquvi, [2]S.H. Ansari, [3]Javed Ahamad, [2]A.K. Najmi, [2]Showkat R. Mir and [4]Afrin Salma

[1]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur, Uttar Pradesh, India
[2]Department of Pharmacognosy, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India
[3]Department of Pharmacognosy, Faculty of Pharmacy, Tishk International University, Erbil, Kurdistan Region, Iraq
[4]Translam Institute of Pharmaceutical Education and Research, Mawana Road, Meerut, Uttar Pradesh, India

Abstract

Background and Objective: The prevalence of obesity is increasing both worldwide and locally in India. It is considered a major health problem and often leads to other associated diseases such as type 2 diabetes, ischemic heart diseases, stroke and cancer. In the present study, the effects of powder of *Rosa damascena* flowers on high-fat diet-induced obesity in Wistar albino rats were examined. **Materials and Methods:** Female Wistar albino rats fed with a High Fat Diet (HFD) (p.o) for 6 weeks were used to induce obesity. Powder of *R. damascena* (214 mg kg^{-1} b.wt.) petals administered orally to HFD-fed rats for 6 weeks. Physiological parameters like body weight, food and water intake, fat pad analysis and biochemical parameters like serum lipids, glucose, Serum Glutamate Oxaloacetate Transaminase (SGOT) and Serum Glutamate Pyruvate Transaminase (SGPT), serum urea and creatinine levels were measured. **Results:** Treatment with powder of *R. damascena* flower petals to HFD-induced obese rats resulted in a significant reduction in body weight gain, fat pads, serum lipids, glucose, SGOT, SGPT and creatinine levels as compared to rats fed HFD alone. Further, the extract also showed a significant increase in High-Density Lipoprotein (HDL) levels. **Conclusion:** These results exhibit that the *R. damascena* flower possesses significant anti-obesity potential.

Key words: *Rosa damascena*, obesity, orlistat, high fat diet, weight reduction, lipid profile

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Corresponding Author: Kamran Javed Naquvi, Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur, Uttar Pradesh, India

Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

Review Article

COVID-19 and Diabetes Mellitus; An Overview

***Dr Reshna V**

Assistant Professor, Department of Pharmacy Practice, Faculty of Pharmaceutical Sciences, Rama University, Kanpur, Uttar Pradesh, India.

***Corresponding author's E-mail:** reshnareshu96@gmail.com

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ABSTRACT

Diabetes Mellitus (DM) is a long-term metabolic disorder that affects many organs in the body. Diabetes may be linked to a serious type of Coronavirus Disease in 2019 (COVID-19). COVID-19 will make people with diabetes three times more likely to become seriously ill or die. They discovered that advanced age, obesity, and other medical conditions linked to diabetes are also associated with increased risk. In the countries hardest hit by the pandemic, increased morbidity and mortality from COVID-19 in diabetic patients have been observed, and this link, as well as the best management of infected diabetic patients, deserve further investigation. Anti-diabetic medications that can minimise inflammation while maintaining good glycemic control are ideal. Patients admitted to the hospital with extreme COVID-19 can need changes to their diabetes care, such as stopping current medications and starting insulin therapy.

Keywords: COVID-19, Diabetes mellitus, Hyperglycemia.

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a viral infectious disease caused by the coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), it was declared a pandemic by the World Health Organization on March 11, 2020 [1]. Increased morbidity and mortality from COVID-19 in diabetic patients have been observed in countries hardest hit by the pandemic, and this connection, as well as the best management of infected diabetic patients, deserve further investigation. Diabetes is one of the most debilitating and deadly diseases in the world. This is due to the fact that diabetes causes both microvascular and macrovascular complications, both of which can have an effect on diabetic patients' survival rates[2]. Patients with diabetes are highly susceptible to adverse outcomes and complications of COVID-19 infection[3]. COVID-19 infection causes a disruption in glucose regulation, making glycemic control difficult and necessitating extra caution in diabetic patients [4]. In light of this, it's critical to comprehend the connection between Diabetes Mellitus and Coronavirus disease in 2019. According to ongoing research, patients with diabetes who have poorly regulated glycemia have a four-fold higher mortality risk and a four-fold longer hospital stay than patients without diabetes[5, 6].

COVID-19 and DM linkage

People who have Diabetes are at increased risk to bacterial and viral infectious diseases, primarily affecting lower airways[7,8].

SARS-CoV-2 viruses take over through endocrine pathway to change the mechanism of blood regulation, metabolism and cause inflammation. The receptor of coronavirus, i.e. Angiotensin-converting-enzyme 2 (ACE2) present on the spike protein, which shows a decisive role in the inflammatory cascade [9].

The S protein(S) of the virus attaches to the host receptors and facilitates the entry of the virus. In a way, the S protein is the entry point for the entry of coronaviruses into target cells. Entry into the host cell depends on the binding of the S protein to a cellular receptor and priming by cellular enzyme proteases. SARS-CoV-2 engages ACE2 as the entry receptor [10]. Hyperglycaemia in the pulmonary vasculature at the time of infection has been shown to increase local influenza viral replication in lung tissue [11]. Current evidence demonstrates that patients with DM are more likely to experience severe symptoms and complications than patients without DM due to COVID-19 [12, 13].

In a study conducted by Bode *et al*. (Glytec Database) on 1122 COVID-19–confirmed patients from 88 US hospitals, the mortality rate was found four-fold higher in diabetic patients (28.8%) as compared to non-diabetic patients (6.2%) and the rate increases with age [14]. These findings were supported by a meta-analysis of 33 studies (16,003 patients) conducted by Kumar *et al*. that reported a significant increase in mortality in a diabetic patient with COVID-19 with an odds ratio (OR) of 2.16 as compared to non-diabetics[15].

Review Article

A Review Article on Phytochemical Investigation and Pharmacological Activity of Various Parts of *Dalbergia Sissoo.*

Pooja Soni *, Dr. Prashant Kumar, Arpita Choudhary, Vipin Kumar, Preeti Katiyar
Faculty of Pharmaceutical Sciences, Rama University kanpur(UP), India.
***Corresponding author's E-mail:** Poojasaraf.1994@gmail.com

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ABSTRACT

Current study discussing the ethnobotanical importance of the different part of the plant *Dalbergia sissoo* its pharmacological activity and various formulation. Nature is like a treasure of medicine. From last thousands year nature give us several type of medicines which we use for the treatment of different type of diseases and valetudinarism. *Dalbergia sissoo* is one the most crucial/significant plant with full of medicinal attribute. *Dalbergia sissoo* (Fabaceae) has reported to possess different type pharmacological activity such as antinociceptive activity, anti-coagulant activity, antibacterial activity, anti-inflammatory activity, memory enhancing activity, antiulcer activity, nephro-protective activity, anti-spermatogenic activity, analgesic activity, antipyretic activity, antitermitic activity, antilithiatic activity, antidiabetic activity, anthelmintic activity, immunomodulation activity and so on. This study divulging the medicinal important and all pharmacological action of the different part of the plant *Dalbergia sissoo*.

Keywords: *Dalbergia sissoo*, pharmacological activity, medicinal important, ethnobotnical, valetudinarism.

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INTRODUCTION

In nature there are several plants are exist which are highly effective to treat different type of diseases. Drugs that are obtained from plants are used in traditional methods of treating the diseases worldwide. *Dalbergia sissoo* belongs to Fabaceae family of flowering plants which is popularly known as 'Indian Rose Wood'/ 'Shisham'.[1] 300 out of 25 species of dalbergia are found in India. Various species of Dalbergia are significant timber trees, assess for their decorative and fragrant wood, rich in aromatic oils. Dalbergia generic name credit to Swedish brothers, Nils and Carl Dalberg, they lived during 18th century.[2] They are grow dexterously on porous soil containing sand, pabbles and boulders.[3] Dalbergia distributed throughout the India mainly in Bihar, Bundelkhand and Central India. *Dalbergia sisso* is very essential plant species for afforestation program because of extremely good growing property.[4] *Dalbergia sissoo* is broadly used in folk medicine for several diseases. Several biologically active compounds have been isolated from *Dalbergia sissoo* such as flavones, isoflavones, quinines and coumarins. Delbergia also contains tectoridin, caviunin-7-O-glucoside, iso-caviunin, tectorigenin, dalbergin, bio-chanin-A, and 7-hydroxy4-methylcoumarin. The heartwood gave 3,5-dihydroxy-trans-stibene biochanin A, dalbergichromene, dalbergenone and iso-dalbergin5. [5]

Botanical description- Shisham is reproduce by seeds, it is caducous tree(fig.1). The height of sisso is up to 25m. with grey – yellow trunk and 2-3 m in diameter but usually smaller. Leaves are 15 cm. long and ovate and five alternate leaflets with fine point tip leathery in texture. They are broad. And flower are whitish to pink in colour, fragrant and length is about 1.5cm. When it grown in open it's trunk in crowded it's pods contain approx 4-5 bean shaped seeds.[6] They produce sucker by the help of taproot and various roots which present on surface. There are some bacteria present on node of roots which makes the plant able to fix the atmospheric nitrogen. When leaves decompose they increase soil fertility by providing extra - nitrogen , iron , organic carbon, potassium. [1]

Table 1: Taxonomical classification of *Dalbergia sissoo*

Kingdom	Plantae
Class	Magnoliopsida
Sub family	Foboideae
Species	D. sisso
Scientific name	*Dalbergia sissoo*
Genus	*Dalbergia sissoo*

Figure 1: *Dalbergia sissoo* plant

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FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY PATCH CONTAINING ATORVASTATIN CALCIUM FOR TREATMENT OF HYPERLIPIDEMIA

Peeyush*[1, 2], Preeti Kush[2], Ajay K. Gupta[3], Preeti Verma[2], Pratiksha Jayaswal[4]

[1]Maharana Pratap College of Pharmacy Kanpur, Kothi, Mandhana Kanpur - 209217, Uttar Pradesh, India.

[2]Adarsh Vijendra Institute of Pharmaceutical Sciences, Shobhit University Gangoh, Saharanpur (U.P.) 247341.

[3]University Institute of Pharmacy , Chhatrapati Shahu Ji Maharaj University, Kanpur - 208024, U.P., India.

[4]Faculty of Pharmaceutical Sciences, Rama university,Mandhana Kanpur-209217, U.P,India

Corresponding author:
Dr.Preeti Kush
Associate Professor
Adarsh Vijendra Institute of Pharmaceutical Sciences, Shobhit University
preetikush85@gmail.com

ABSTRACT
The purpose of this research work was to improve a matrix-typetransdermal drug delivery system (TDDS) those containing atorvastatin calcium act as a hyperlipiemic drug which having different ratios of Ethyl cellulose (EC) and hydrophilic (HPMC).Tween 80 and plasticizer glycerine used by the solvent evaporation technique. The Transdermal patch system has been providing controlled continuous drug delivery via the skin into the systemic transmission. The aim of this study to develop thetransdermal patches of Atorvastatin Calcium for the prevent its first pass metabolism and finally get achieve controlled release. The formulation of AtorvastatinCalciumhaving a property to sustained release transdermal drug delivery system.AtorvastatinCalcium is commercially available as tablets of 10mg, 20mg, and 40mg and 80mg strengths as immediate release dosage form. Matrix films were evaluated for their physicochemical characterization tracked by in-vitro evaluation. The medication indicated faster release because of hydrophilicity. The assessment plans were completed known as rate dampness content, rate dampness take-up, collapsing continuance, thickness, weight variety, physical appearance, UV-Visible spectrophotometer, λ max and IR spectroscopy and quantitative estimation of the medication. It was appeared by all the awareness that the antilipidemic tranquilize atorvastatin calcium could fill in as a fitting possibility for TDDS that can improve the bioavailability and sustain release of action, so that it would be better medication in the form patch for treatment of hyperlipidaemia.

KEYWORDS: Atorvastatin Calcium, Transdermal patch, Transdermal delivery**,** IR spectroscopy, Skin permeation, Dialysis membrane.

INTRODUCTION

Hyperlipidaemia is a condition excess of fatty substances called lipids, largely cholesterol and triglycerides, in the blood. It is also called **hypolipoproteinaemia** because these fatty substances travel in the blood attached to proteins. This is the only way that these fatty substances can remain dissolved while in circulation**[1]**.Atorvastatin Calcium was chosen as the suitable candidate for this study since it possesses near ideal characteristics that a drug must have in formulating a transdermal drug delivery system: low molecular mass, high lipid solubility, effective in low plasma concentration as well as a high degree of first-pass metabolism. The aim of this study was to develop and evaluate transdermal patches of Atorvastatin Calcium so as to prevent its firstpass metabolism and achieve controlled release. These factors in addition to its low molecular weight low bioavailability (12%), low melting point (159.2-160.7°C), high lipid solubility and effective in low plasma concentration necessitates the formulation of sustained release transdermal drug delivery system for AtorvastatinCalcium**[2]**.
A transdermal patch is a medicated adhesive patch that is placed on the skin to deliver a specific dose of medication through the skin and into the bloodstream. Since early, dosage of Transdermal therapeutics system has been available commercially. Transdermal drug delivery systems (TDDS), also known as patches, are dosage forms designed to deliver a therapeutically effective amount of drug across a patient's skin**[3]**. Transdermal drug delivery system allows delivery of contained drug into the systemic circulations via permeation through skin layers at a controlled rate. Transdermal delivery not only provides controlled, constant administration of the drug, but also allows continuous input of drugs with short biological half-lives and eliminates pulsed entry into systemic circulation, which often causes undesirable side effects. The outermost layer of skin, stratum corneum (SC), forms a major's barrier to most

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Article

Gymnemic Acid-Rich Fraction from *Gymnema Sylvestre* Leaves Ameliorates Post Prandial Hyperglycaemia in *In-vitro* and *In-vivo* Studies

Javed Ahamad [1], Kamran Javed Naquvi [2], Saima Amin [3], Showkat R Mir [4]*

[1] Department of Pharmacognosy, Faculty of Pharmacy, Tishk International University, Erbil, Kurdistan Region, Iraq
[2] Department of Pharmacognosy and Phytochemistry, Faculty of Pharmaceutical Sciences, Rama University, Rama City, Mandhana, Kanpur (Uttar Pradesh) - 209 217, India
[3] Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, PO Hamdard Nagar, New Delhi, India
[4] Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, PO Hamdard Nagar, New Delhi, India
* Corresponding Author: showkatrmir@gmail.com (Showkat R Mir)

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Abstract: Gymnemic acids are triterpenoid glycosides with gymnemagenin as common aglycone found in *Gymnema sylvestre* (Gurmar). *G. sylvestre* is often used in herbal formulations because of its beneficial actions in diabetes, hyperlipidemia, and gastric problems. The purpose of the present study is to evaluate gymnemic acid-rich fraction of *G. sylvestre* in *in-vitro* and *in-vivo* model to control postprandial hyperglycemia. The gymnemic acid-rich fraction of *G. sylvestre* (GARF) was prepared by ultrasonic-assisted extraction using methanol-water (81:19 v/v) at a temperature of 49°C for 50 min using a solid-to-solvent ratio of 1:12.5 g/ml and gymnemic acid content was determined by validated High-performance thin-layer chromatography (HPTLC) densitometric method. The GARF effect was evaluated in the *in-vitro* model on α-amylase and α-glucosidase enzymes, while the antihyperglycemic effect was studied in carbohydrate-challenged and diabetic rats induced by Streptozotocin (STZ). *In vitro* studies show that GARF produces dose-dependent enzyme inhibition with IC_{50} values of 4.34 ± 0.81 mg/ml and 8.78 ± 1.22 mg/ml, respectively. *In-vivo* studies of normal and diabetic rats showed that GARF treatment (200 mg/kg b.w., p.o.), causes a significant ($p < 0.01$) blood glucose reduction effect in both models. The current study provides a scientific basis for the use of *G. sylvestre* in the management of diabetes mellitus.

Keywords: *Gymnema sylvestre*, Apocynaceae, gymnemic acids, diabetes mellitus, α-amylase, α-glucosidase PPHG

Introduction

Diabetes has emerged as a major lifestyle disorder and post-prandial hyperglycemia (PPHG) is one of the main risk variables associated with it. PPHG results from the rapid uptake of glucose in the intestine under the influence of α-amylase and α-glucosidase enzymes that transform poly-saccharides and oligosaccharides into mono-saccharides [1]. Inhibition of α-amylase and α-glucosidase enzymes leads to a decrease in their hydrolysis and thereby regulated blood glucose levels [2]. The inhibition of these enzymes is therefore an important strategy for the management of PPHG [3]. As therapeutic agents, α-

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Review Article

Diabetes Mellitus: A Predisposing Factor of Necrotising Fasciitis

***Dr Reshna V**

Assistant Professor, Department of Pharmacy Practice, Faculty of Pharmaceutical Sciences, Rama University, Kanpur, Uttar Pradesh, India.

***Corresponding author's E-mail:** reshnareshu96@gmail.com

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ABSTRACT

Necrotizing fasciitis with secondary necrosis of the subcutaneous tissues is a rapidly progressive inflammatory infection of the fascia. The propagation velocity is directly proportional to the thickness of the subcutaneous layer. Necrotizing fasciitis travels around the plane of the fascia. These are primarily two types, i.e., respectively, mono microbial and poly microbial infections. The most common comorbidity associated with necrotizing fasciitis is diabetes mellitus. Up to 44.5 percent of patients with this disorder are diabetic. Diabetes patients normally have a type I poly microbial disease. Diabetic patients who, due to poor immunity, are more vulnerable to such an infection. Diabetic patients show delayed healing of cutaneous wounds and increased susceptibility to infection.

Keywords: Diabetes mellitus, Necrotising fasciitis, Poly microbial infection, Mono microbial infection.

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INTRODUCTION

Necrotizing fasciitis with secondary necrosis of the subcutaneous tissues is a rapidly progressive inflammatory infection of the fascia. The propagation velocity is directly proportional to the thickness of the subcutaneous layer. Necrotizing fasciitis travels around the plane of the fascia. [1,2,3]–Aerobic, anaerobic, or mixed flora can be the causative bacteria.[4] A few different syndromes of necrotizing fasciitis should be known. The 3 most important ones are as follows:

- Type I, or polymicrobial
- Type II, or group A streptococcal
- Type III gas gangrene, or clostridial myonecrosis

Risk factors for necrotizing fasciitis

- Diabetes
- Chronic disease
- Immunosuppressive drugs (eg, prednisolone)
- Malnutrition
- Underlying malignancy
- Obesity
- Peripheral vascular disease
- Renal failure
- Age > 60 years
- Intravenous drug misuse

Necrotizing fasciitis is usually a rapidly occurring acute phase over many days. In about 80 percent of all cases, it is a direct sequela of bacterial infection introduced by a break in the integrity of the skin. For the majority of these single-site source infections, Gram-positive cocci, specifically strains of Staphylococcus aureus and Streptococci, are responsible. Due to a mixture of gram-negative and anaerobic participation, polymicrobial infections also occur.[5,6]

The most common comorbidity associated with necrotizing fasciitis is diabetes mellitus. Up to 44.5 percent of patients with this disorder are diabetic. Diabetes patients typically have polymicrobial type I disease and have worse outcomes, with a higher amputation rate relative to non-diabetics.[7] Diabetic patients who are more vulnerable to such an infection by poor immunity.[8] Patients with diabetes have reduced cutaneous function. Healing of wounds and increased infection resistance, which may affect the path of infections of soft tissue.[9] In order to perform tissue debridement and start a broad-spectrum antibiotic cover, surgical referral should be made as early as possible, both steps being necessary to reduce morbidity and mortality rates.[10]

As an empirical therapy, broad-spectrum antibiotic combinations against gram-negative, gram-positive bacilli and anaerobes should be used. Among the many choices are vancomycin, linezolid, or daptomycin combined with one of the following: either piperacillin-tazobactam or a carbapenem or ceftriaxone plus metronidazole, or a fluoroquinolone plus metronidazole. [11,12]

Review Article

Pharmacological Activities of *Celastrus paniculatus Willd.* : A Review

Arpita Choudhary*, Pooja Soni
Faculty of Pharmaceutical Sciences, Rama University, Kanpur (UP), India.
***Corresponding author's E-mail:** arpitachoudhary466@gmail.com

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ABSTRACT

Current review includes medicinal importance and various pharmacological activities of *Celastrus paniculatus Willd*. *Celastrus paniculatus Willd.* belongs to *Celastraceae* family. It is a plant of medicinal importance and is being used in Ayurveda from a very long time to treat different disorders mainly brain related disoders. It is also known as 'Tree of life'. It is commonly known as Malkangani and Jyothishmati in hindi and sanskrit respectively. Different studies have proved that it has various pharmacological activities which includes neuroprotective activity, rejuvenative activity, cardiovascular activity, analgesic activity, anti-inflammatory activity, anti-infertility activity, antioxidant activity, free radical scavenging activity anti-arthritic activity etc. It has been proved in various studies that *Celastrus paniculatus willd.* is a potent drug for improving memory and intellect. This manuscript reviews current information on various pharmacological and medicinal activities of *Celastrus paniculatus*.

Keywords: *Celastrus paniculatus* Willd., Malkangani, Pharmacological activities, Celastraceae, Jyothishmati, antioxidant activity.

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INTRODUCTION

Celastrus paniculatus Willd. belonging to family Celastraceae is a woody liana and is also known as 'Elixir of life'. It is large, woody climbing shrub with 10 m height, elongating branches which are reddish brown in colour.[1] It is known as Malkangani in Hindi and Jyotishmati in Sanskrit.[2, 3] It is widely distributed in the Maldives, Australia, China, Cambodia, Malaysia, Taiwan, Nepal, Thailand and in the Pacific Islands. In India it is found mainly in Maharashtra, Andaman and Nicobar on an altitude of 1800m.[4] It has a major role in Ayurveda, Folk medicine, Sowa-Rigpa, Unani, Siddha.[5] This plant is used extensively. The oil obtained from *Celastrus paniculatus* is bitter, thermogenic and promotes intellect. This seed oil plays an important role in abdominal disorders, sore and beri-beri.[6]

Taxonomical classification[8]

Kingdom - Plantae

Sub –kingdom - Tracheobionta

Superdivision - Spermatophyta

Division - Magnoliophyta

Class - Magnoliopsida

Order - Celastrales

Family - Celastraceae

Genus - Celastrus

Species - Paniculatus

Table 1: Medicinal properties of various parts of *Celastrus paniculatus*[7]

Plant part	Medicinal properties
Bark	Abortifacient, Wound healing, Sedative, Bronchodilator
Root	Antidote for Snake bite poisoning
Leaves	Emmenagogue
Leaf Sap	Antidote for Snake bite poisoning
Seeds	Memory enhancer, aphrodisiac, febrifuge, diuretic, anti-inflammatory, antihepatotoxic, emollient, laxative.

Figure 1: *Celastrus paniculatus* (Malkangani) Plant with fresh seeds.

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Top 100 most cited papers on medicinal plants research: A bibliometric review

Guptnath Trivedi
Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar-848125
Email: gupt.bhu@gmail.com

Nitesh Kumar Gupta
Gangadhar Meher University Sambalpur, Odisha-768001
Email: nitbhu80@gmail.com

Vinay Kumar
Centurian University of Technology and Management, Odisha, India- 761211
Email: vinay.kumar@cutm.ac.in

Thirugnanasambandam Ramanathan
Associate Professor, Centre of Advanced Study in Marine Biology, Faculty of Marine Sciences, Annamalai University, Parangipettai, Tamil Nadu, India
Email: drtrcasmb@gmail.com

Alok Bharadwaj
Assistant Professor, Department of Biotechnology, GLA University, Mathura (U P.)-281406

Sanjeev Kumar Gupta
Associate Professor of Botany, GOVT DEGREE COLLEGE BASOHLI, J&k UT
Email: sanjeevbotany@gmail.com

Rizki Andita Noviar
Nursing Department, National Brain Center Hospital, Indonesia
Email: ranoviar@gmail.com

Abhishek Kumar
Faculty of pharmaceutical sciences, Rama University, Kanpur, U.P, India
Email: Abhiworld1997@gmail.com

***Abstract*---**Background: The idea of the paper is to identify trends and examine the characteristics of the top 100 cited papers on medicinal plants research. Methods: Web of Science citation database was

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Corresponding author: *Trivedi, G.; Email: gupt.bhu@gmail.com*
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queried to identify the citations of the top 100 most cited papers on medicinal plants research. R and Excel statistical software were employed to extract bibliographic data on various parameters such as number of authors, publication year, journal name, country of origin, research collaboration, trend of research *etc*. The top 100 cited papers

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Research Article

THE JOURNEY OF DELTA TO OMICRON: COVID-19

Sani Pratap Singh, Aditya Singh and Gyanendra Singh*

Faculty of Pharmaceutical Sciences, Rama University, Kanpur-UP-209217

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A B S T R A C T

In coronavirus infections (COVID-19), the Omicron is a novel corona virus strain that has infected a large population. A quick diagnostic test specific for COVID-19 has been created, which can be used to diagnose infected people. Thanks to genetic science, COVID-19 has also been discovered to pass from person to person by fomites, touch, and droplets. Meanwhile, the Delta strain was found in India in December 2020, and it quickly spread throughout the nation. The Delta version is the most common SARS CoV-2 variant at the moment, accounting for more than 99 per cent of Covid-19 cases. The virus's Omicron strain is now the most common. It is a high-level overview of what scientists have discovered about the Omicron variety.

INTRODUCTION

The Covid-19 has been identified in 171 countries, the global health WHO said that Omicron is soon set to replace Delta globally as a result of its immunity evading potential. Scientists are closely monitoring whether cases caused by the Omicron variant reported on public databases start to supplant those caused by Delta.(Wang, Ge *et al*. 2022)

"As of January 20, the Omicron variant has been identified in 171 countries. The variant has rapidly outpaced Delta in most countries, driving an upsurge of cases in all regions. Scientists across the world are racing to understand the Omicron variant of Covid-19 that has led to major panic with the World Health Organisation (WHO) declaring it a Variant of Concern. While the Omicron variant is speculated to be more dangerous than others, it was the Delta variant that wreaked havoc in several parts of the world.(Earnest, Uddin *et al*. 2022)As a recommendation for everybody in regions with large or high transmission to prevention are to wear a mask in public places and public indoor locations, even though they are completely vaccinated.(Escandón, Rasmussen *et al*. 2021)

Firstly, a huge surge in new cases reversed the growing trend after a regular dropping down of corona cases since January 2021. WHO saw a sudden and worrying increase in the country's COVID-19 case and hospitalisation rates in these days leading up to our recommendation update.(Espenhain, Funk *et al*. 2021)

After 07 (seven) da[illegible]ported cases moving average was about 12,000 at the [illegible]riod in June 2021. The 7 (seven) days they were mo[illegible]age of cases surpluses 60,000 on July 21. This rate of cases was similar to what we'd seen previous to the vaccine's broad distribution.(Abdolazimi, Shishebori *et al*. 2021)Second, new research suggests that the Omicron variant is much more infectious and causes higher transmissibility than some other variants, even in those who get vaccinated. This contains freshly available data from the World Health Organization (WHO) and its public health partners. The latest WHO science expound COVID-19 Vaccines and Vaccination and continues epidemic investigation into the Omicron variants.(Andrews, Stowe *et al*. 2022)

Here's a quick rundown of what WHO scientists recently discovered about the Omicron variant. More information or samples will be collected with the help of more accessible data or the data available in other formats. Up to February 2022, the maximum cases were seen in the UK is 03 lacks & USA reaches corona patients infected by Omicron variant is more than 04 lack, but casualty is less compared to second wave of COVID-19.In the United States, the United Kingdom, Europe, and Asian countries, Omicron is the most common viral variant. (Nesa, Babu *et al*. 2022)

Infections through Omicron and their Transmission

The Omicron variety of SARS-CoV-2 generates COVID-19, generates more infections and multiplies quicker. Other types spread more slowly than the Omicron version.(Khandia, Singhal *et al*. 2022)

The Omicron variation is the most contagious one

The Omicron variant is infectious more than three times than the previous variants. Some studies indicate that the Omicron variant might cause more extreme affliction in unprotected people than earlier structures. (Padmanabhan and Wadsworth

Corresponding author:* **Gyanendra Singh

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Medicinal Plant Used Against Cancer: A Review

Rajat Srivastava *[1], Priya Tiwari [2]

[1] Assistant Professor, Shambhunath Institute of Pharmacy, Jhalwa, Prayagraj- , Utta

[2]Assistant professor, Faculty of Pharmaceutical Sciences, Rama, University, Kanpur-

ABSTRACT

Nowadays natural products are considered protective markers compared to synthetic produc human health and the environment. Although a large number of synthetic drugs have bee pharmacopoeia, there is still no drug system in the world that has been able to solve all hea such as Cancer. The extracts from plants have played an important role in the development agents. The plant kingdom produces naturally occurring secondary metabolites that are being activities leading to the development of new clinical drugs. Global results continue to identify plants. In recent years out of fear of adverse effects, people have chosen to make greater use review attempted to summarize a few plants in India and outside India that have anti-cancer ac

Keywords: Cancer, Anti-cancer agents, Medicinal Plants, Plant kingdom, etc.

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*Address for Correspondence:

Srivastava Rajat, Assistant Professor, Shambhunath Institute of Pharmacy, Jhalwa, Prayagraj- 211012, Uttar P

INTRODUCTION

... have a long history of being used in cancer ... his analysis of cancer fighting plants

men. Breast cancer, lung ... rectum cancer, uterine co ... are the most common canc

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Augumentation and evaluation of betasitosterol based liposomes

Priya Tiwari*, Vaseem Ahamad Ansari◆, Tarique Mahmood and Farogh Ahsan

Department of Pharmacy, Integral University, Dasauli, Kursi Road, Lucknow-226026, Uttar Pradedsh, India
**Faculty of Pharmaceutical Sciences, Rama University, Rama City, Mandhana, Kanpur-209217, Uttar Pradedsh, India*

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Abstract

The combination of liposomes and betasitosterol (BS) may alter the current state of drug delivery technology. Although, liposomes are widely considered as a promising model for drug delivery of bioactive compounds, there are still significant barriers to widespread drug use. Two ways to overcome the factors associated with the effectiveness of liposomes in drug delivery are suggested. The primary involves the preparation of the liposome containing active components, while the second involves the synthesis of liposomes pre-loaded with drugs. This seeks to provide intelligent solutions to the limitations of normal liposomes such as short half-life of plasma, toxicity, stability, and poor control of long-term drug release. This review describes significant developments in integrated technologies combining the concepts of depot polymeric scaffolds with liposome technologies to bypass the limits of standard pharmaceutical liposomes.

1. Introduction

Decades ago, because of their unique features, such as hydrophilic and hydrophobic properties, good biocompatibility, low toxicity, systemic deficits, and targeted delivery of bioactive compounds into the workplace, liposomes gained a lot to be considered as a network system of active therapeutic compounds (Chen *et al*., 2010; Mastrobattista *et al*., 2002; Schnyder *et al*., 2005). In addition, some of the achievements since liposomes have been determined by size from microscale to nanoscale as well as engineered polymer adhesives that act on peptide, protein, and antibody (Bangham *et al*., 1974; Yousefi *et al*., 2009). Although, liposomes are widely considered as promising carriers of an effective therapeutic combination, a number of the main effects of medical liposomes are that rapid deterioration due to systemic (RES) and inability to detect ongoing drug delivery over a long period of time (Torchilin *et al*., 2005). New ways are needed to overcome these challenges. Two polymeric methods have been suggested at this point. The primary method involves the surface conversion of liposomes by hydrophilic polymers such as polyethylene glycol (PEG) while the other is to synthesize pre-loaded drug liposomes within polymer depot-based systems (Chen *et al*., 2010). A study by Stenekes and colleagues (Stenekes *et al*., 2000; Vishvakrama *et al*., 2014) reported the success of using a temporary depot of polymeric materials to manage the extraction of loaded liposomes of pharmaceutical applications. This breakthrough results in new applications, which require research into interactions between drugs, biomaterials, chemistry, molecular, and cell biology. Numerous studies in this context are reported within the interim depot delivery system to manage the release of pre-loaded drug liposomes (Chung *et al*., 2006; Hara *et al*., 2001; Wallace *et al*., 2003). This method was developed to combine benefits while avoiding your imperfections in both liposome and polymeric based systems. Liposome-based systems are known to have limitations such as instability, half-life, and rapid specification. However, they are more biocompatible than polymer-based systems (Bangham *et al*., 1974; Yousefi *et al*., 2009). On the other hand, polymer-based systems are known to be stable and provide continuous improved delivery compared to liposome-based systems. However, one of the main obstacles is biocompatibility impairment associated with bioactive losses (*i.e.*, drug) during the formation of conditions such as sonication, temperature or exposure to organic solvents (Mulik *et al*., 2009; Mudshinge *et al*., 2011). The benefits of a composite system, however, include improved liposome stability, liposome ability to manage drug release in the short term of your life, and preserving drug bio activeness in polymeric-based technologies. Additionally, improved efficiency can also be achieved in this integrated delivery system by setting aside that of polymeric-based or liposome-based systems. Therefore, the purpose of this article is to review existing liposome and polymeric based technologies, similarly because the integration of liposome-based technologies within technology based on a polymeric depot for continuous drug extraction. The interview will guide different types of liposome-based technologies, different ways to embed drug-depleted liposomes within the depot, and various reported methods to control the speed of continuous drug delivery within depot systems over a long period of time. Liposomes of the vesicle are concentrated when the fluid phase is completely absorbed by the lipid layer (Dwivedi *et al*., 2014; Immordino *et al*., 2006). The outer lipid layer is sometimes produced in phospholipids with hydrophilic head and hydrophobic tail (Oussoren *et al*., 1999; Poste *et al*., 1982; Shivhare *et al*., 2009). Liposomes cancombining a hydrophilic drug into its aqueous interior with a lipophilic drug by a lipid bilayer (Demanty *et al*., 2009; Elbialy and Mady, 2015;

Corresponding author: Dr. Vaseem Ahamad Ansari
Associate Professor Department of Pharmacy, Integral University, Dasauli, Kursi Road, Lucknow-226026, Uttar Pradedsh, India
E-mail: vaseem9in@gmail.com
Tel.: +91-93649

INVESTIGATION OF IN-VITRO ANTI-OXIDANT & ANTI-ULCER ACTIVITY OF ANGIOGENESIS LATIFOLIA ROXB (DHAVA)

Dr. Keshamma E[1], Puja Mittal[2], Dr. Anil Kumar[3], Ajeet Kumar[4], Vishesh Kumar Maurya[5], Tushar Singhal[6], Ajit Kumar Varma[7], *Sushil Giri[8], Roshan Kumar[9]

[1]Associate Professor, Department of Biochemistry, Maharani Cluster University, Palace road, Bangalore-560001, INDIA.

[2]Associate Professor, Chitkara College of Pharmacy, Chitkara University, Rajpura Punjab, INDIA.

[3]Ex Research Scholar, Department of Botany, DDU Gorakhpur University Gorakhpur-273009, INDIA.

[4]Assistant Professor, Department of Pharmacy, Invertis University, Invertis Village, National Highway - 24 Bareilly U. P. 243123, INDIA.

[5]Assistant Professor, Department of Pharmacy, Invertis University, Invertis Village, National Highway - 24 Bareilly U. P. 243123, INDIA.

[6]Senior Clinical Researcher, Department of Clinical Research, MAX Healthcare Dehradun, INDIA.

[7]Asst.Professor, Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur - 209217 (U.P.), INDIA.

[8*]Assistant Professor, MIT College of Pharmacy, MIT Group of Institutions, Moradabad-244001, Utter Pradesh, INDIA.

[9]Assistant Professor, Guru Nanak College of Pharmaceutical Sciences, Dehradun, Uttarakhand, INDIA.

Corresponding Author**

Sushil Giri

Email: susilgiri4@gmail.com

Abstract

Ulcers are a potentially debilitating condition that can arise in people for a number of reasons, including prolonged exposure to anti-inflammatory drugs, stress, and other factors. Ulcers are notoriously difficult to pin down to a specific cause; however, it is generally accepted that they are brought on when the body's natural defence mechanisms are unable to maintain the mucosal lining's integrity in the face of agressive factors. As a consequence of this, researchers are continuously investigating the gastroprotective properties of a wide variety of medicinal plants in an effort to find new ways to enhance currently available anti-ulcer drugs. We carried out an exhaustive phytochemical analysis in order to find out what kinds of biologically active compounds are found in the young leaves of Anogeissus latifolia. Some of the compounds that we looked for were glycosides, alkaloids, amino acids, carbohydrates, flavones, phenols, proteins, reducing sugars, saponins, steroids, tannins, and triterpenoids. Other compounds that we found included amino acids, flavones, and phenols. To accomplish what we set out to do, some examples of solvents that may be utilised include acetone, benzene, chloroform, ether, methanol, and distilled water. In addition to alkaloids, the research revealed the presence of amino acids, carbohydrates, flavones, phenols, proteins, reducing sugars, saponins, steroids, tannins, and triterpenoids. The acetone extract of A. latifolia, which comprised 90% of the total volume, had

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Role of G-protein coupled receptor (GPCRs)/(GPR-120) as an agonists in diabetic wound healing

Jagat Pal Yadav [a, b, *], Dinesh Kumar Patel [a], Prateek Pathak [c], Maria Grishina [c]

[a] Department of Pharmaceutical Sciences, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, 211007, India
[b] Pharmacology Research Laboratory, Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India
[c] Laboratory of Computational Modeling of Drugs, Higher Medical and Biological School, South Ural State University, Chelyabinsk, 454008, Russia

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ABSTRACT

Type 2 diabetes (T2D) or Obesity has been gradually rising throughout the globe. It is a major cause of noncommunicable illnesses such as cardiovascular disease type 2 diabetes (T2D), Nonalcoholic Steatohepatitis (NASH), nonalcoholic fatty liver disease (NAFLD), and numerous malignancies, all of which have a negative effect on quality of natural life and life expectancy. Diabetic wound healing is hampered by a complicated pathophysiology combining immunological, metabolic factors and neuropathic. There are more than thirty GPCRs that have been occupied in the expansion or development of β-cell disfunction, insulin resistance, obesity, and T2DM Still, at current, only the GLP-1R has been effectively battered therapeutically. They play major function in gut hormone Secretion and appetite control adipogenesis, anti-inflammatory functions, antidiabetic functions. Diabeties is current treated by dressings, antidiabetic Drugs, growth factors such as (TGF1, FGF, EGF, VEGF and PDGF). Future therapeutic strategies will be based on single growth factor, multiple growth factor, skin, cytokine enhancer, cytokine antagonist, matrix metalloproteinase antagonist, gene therapy and stem cell therapy, extracellular matrix and angiogenesis.

Abbrevations:

T2D	Type 2 diabetese
NS	Nonalcoholic Steatohepatitis
NFLD	Nonalcoholic fatty liver disease
GPCRs	G protein-attached receptors
TGF	Transforming growth factors
PDGF	Platelet-derived growth factor
ECM	Extracellular matrix
MMPs	Matrix metalloproteinase
DPP4	Dipeptidylpeptidase- 4
DR	Diabetic retinopathy

* Corresponding author. Department of Pharmaceutical Sciences, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, 211007, India.
E-mail addresses: j.p.yaduvansi@gmail.com, 19phpsc210@shiats.edu.in (J.P. Yadav).

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A Study on Anti-inflammatory Activity of Stem Bark Extract of *Holoptelea integrifolia*

Harendra Pratap[1]*, Manish Kumar Shakya[1], Talever Singh[1], Mohit Agrawal[1], Nishant Singh Katiyar[2]

[1]Department of Pharmacology, Rajiv Academy for Pharmacy, N.H-2, P.O. Chhatikara, Mathura, (U.P), India.

[2]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, (U.P), India.

*Corresponding Author E-mail: **harendrapratap1996@gmail.com**

ABSTRACT:

Background: *Holoptelea integrifolia* has been used for a long time in traditional medicine to cure inflammatory pain. The goal of the current research was to consider the anti-inflammatory activity and phytochemicals study of both the extracts of the stem bark of *Holoptelea integrifolia*. **Methods:** Anti-inflammatory potential was figure out in Carrageenan and Histamine models at 200 mg/kg doses. Apart from this, we have evaluated parameters like paw edema body weight, locomotor activity, hematological, biochemical assessment, etc. **Results:** Qualitative chemical test investigation of both the extracts of *H. integrifolia* stem bark acknowledge the presence of proteins, amino acids, alkaloids, glycosides, tannins, and flavenoids. The 200 mg/kg, p.o dose of the extract showed remarked ($P < 0.05$) dose-dependent inhibition of edema formation. Both the ethanolic extract (200 mg/ kg, b. w) and aqueous extract (200 mg/ kg, b. w) of *H. integrifolia* stem bark showed remarked anti-inflammatory properties in comparison to reference drug Ibuprofen. In the Carrageenan model, the ethanolic extract has good anti-inflammatory activity than the aqueous extract. So, the ethanolic extract of stem bark of *H. integrifolia* is used to combat inflammation alone or with other conventional anti-inflammatory agents to treat different inflammatory disorders. **Conclusion:** Taken together, these results support the traditional use of *Holoptelea integrifolia* as a potent anti-inflammatory agent that may be proposed for the treatment of inflammatory pain.

KEYWORDS: Anti-inflammatory, *Holoptelea integrifolia*, Carageenan, Histamine, Flavanoids, Stem bark.

INTRODUCTION:

Inflammation is a multifactorial biological reaction of the living tissue to injuries leading to harmful stimuli, pathogens, irritants characterized by pain, swelling, redness with warmth, and loss of functions[1,2]. The inflammation is involved in the elimination of the primary cause of the cell injury, eliminate necrotic cells and cause damage to a tissue or organs, and starting tissue repair[3].

Based on the duration and course the inflammatory process has 2 phases**.** The acute inflammation response consists of cellular infiltration leading to edema formation and increased permeability of blood vessels as a result of a short time of extravasations of proteins and fluid and aggregation of leukocytes at the inflammatory position[4]**.** Chronic inflammation is viewed to be weeks or a month that is called active inflammation[5]. It is set by the infiltration of lymphocytes and macrophages, fibroblasts, the multiplication of the collagen fibers, and the development of the connective tissues that are at the end of the day start to the development of the granuloma[6]**.**

The plant named *H. integrifolia* is found in India on the roadsides also called (Papadi) plant locally and contains a wide range of organic properties. Also known as Indian elm/Ulmus Integrifolia having a place with the Ulmaceae family. Founded in India up to a 2000 ft. e[illegible]malayan locale from Jammu eastbound. Reaching out to Assam and Burma, timber-lands of Orissa, Saharanpur, Biha[illegible] in, W. Bengal, and Chota Nagpur. In traditionally the *H. integrifolia* plant is used in the treatment of leprosy, diabetes, [illegible]tion, wound healing, and rheumatism, etc.[7]

The stem bark of *H. integrifolia* has been reported to contain two triterpenoid fatty acids esters holoptelin A and B, 2-amino

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Analyze the Effects of Prebiotics on the Immunity of Human Beings through Various Clinical Studies

Garima Singh[1], Gunjan Soni[2], Shaikh Rajesh Ali[3], Shital J. Sonune*[4], Ashitha K Sanuj[5], Mukta Sharma[6], Mohammed Saleh Al. Ansari[7], Abhishek Kumar[8]

[1]Assistant Professor, GD Goenka University, Gurugram
[2]Teaching faculty, Blackboard Education and Research foundation, India
[3]P. G. Department of Microbiology, Acharya Prafulla Chandra College, New Barrackpore, North 24 Pargonas, Kolkata-700131, West Bengal, India
[4] (Corresponding author) Lecturer, Department of Prosthetic Dental Science, College of Dentistry, Jouf University, Sakaka, KSA.
[5]Assistant Professor, Department of Microbiology, EMEA College of Arts and Science, Kondotty, KERALA
[6]School of Life Sciences and Technology, IIMT University, Meerut
[7]Associate Professor, Chemical Engineering, College of Engineering, University of Bahrain, P.O. Box 32038, Kingdom of Bahrain
[8]Faculty of pharmaceutical sciences, Rama University, Kanpur, U.P, India
Corresponding author email i.d.: dr.shital.sonune@jodent.org

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ABSTRACT
Some other elements of nutrition are becoming more essential, such as ensuring good health and preventing illness, in addition to providing the required nutrients for growth and development. The content and safety of food items are of particular concern in the highly processed food industry. Food poisoning, obesity, allergies, cardiovascular disease, and cancer—the 21st-century plague—are all serious issues that need attention to food quality. Probiotics and prebiotics may have a positive impact on a person's health, according to scientific studies. A diverse community of bacteria lives in the human gastrointestinal tract. In addition to coexisting with their host, commensal intestinal bacteria also go through a process known as symbiotic co-evolution. Bacteria that live in the intestines have a wide range of tasks, including producing nourishment for the host, protecting the body against intestinal pathogens, and regulating the immune system. Lactobacilli and bifidobacterial, in particular, are stimulated to proliferate by prebiotic oligosaccharides, which are not digested by humans. Prebiotics are being studied in numerous clinical studies to see what effect they have on human immunity.
Keywords: Prebiotics, Immunity, Human Beings, Clinical Trials, Diseases, Diabetes, Obesity, etc.

I. INTRODUCTION

The immune system is made up of a variety of cells and chemicals that work together to defend the body against pathogens. Two primary branches of the immune system—innate (or non-specific) responses and adaptive (specific) responses—make up the immune system. During microbial challenges, the innate immune system aids in the activation of the adaptive immune system by immediately discriminating between self and non-self. Antigen-specific reactions and immunological memory enable the host to respond more quickly to a previously encountered disease or antigen when it is met again. Cell types that engage in both kinds of responses communicate and interact extensively. Macrophages, for example, have a role in both the innate and adaptive immunological functions of the host. Innate and adaptive immunity are crucially influenced by commensal microorganisms in the gut.

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Liver cirrhosis: The struggling liver

Dr. Garima Singh
Assistant Professor, Nutrition and Health Department, GD Goenka University, Gurugram, Delhi

Suman Bala
Suman Bala, Assistant Professor, Department of Home Science, Kurukshetra University, Kurukshetra, Haryana, India.

Sonal Katoch
Nutrition and Health Department, GD Goenka University, Gurugram, Delhi

lakhvinder kaur
Associate professor, Manav rachna international institute of research and studies
Email: Lakhvinder.fahs@mriu.edu.in

Anil Kumar
Ex Research Scholar, Department of Botany, DDU Gorakhpur University Gorakhpur-273009
Email: Email-akdwivedinutra25@gmail.com

Abhishek Kumar
Faculty of pharmaceutical sciences, Rama University, Kanpur, U.P, India
Email: Abhiworld1997@gmail.com

Alok Bharadwaj
Assistant Professor, Department of Biotechnology, GLA University, Mathura (U P.)-281406

Ardhariksa Zukhruf Kurniullah
Faculty of Communications Science, Mercu Buana University, Jakarta, Indonesia
Email: ardhariksa.zukhruf@mercubuana.ac.id

***Abstract*---**Liver cirrhosis is a chronic liver infection. It consist of deterioration of liver cells along with fibrosis and infection generating nodules. Patients with cirrhosis frequently have either global malnutrition or alterations in specific aspects of nutritional status, such as micronutrient deficiencies, due to multiple mechanisms, including poor nutritional intake, poor absorption, and increased losses. In addition, one of the most significant nutritional problems in cirrhotic patients is muscle wasting and sarcopenia. Cirrhosis of the

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[1]Assistant Professor, GD Goenka University, Gurugram
[2]Teaching faculty, Blackboard Education and Research foundation, India
[3]P. G. Department of Microbiology, Acharya Prafulla Chandra College, New Barrackpore, North 24 Pargonas, Kolkata-700131, West Bengal, India
[4] (Corresponding author) Lecturer, Department of Prosthetic Dental Science, College of Dentistry, Jouf University, Sakaka, KSA.
[5]Assistant Professor, Department of Microbiology, EMEA College of Arts and Science, Kondotty, KERALA
[6]School of Life Sciences and Technology, IIMT University, Meerut
[7]Associate Professor, Chemical Engineering, College of Engineering, University of Bahrain, P.O. Box 32038, Kingdom of Bahrain
[8]Faculty of pharmaceutical sciences, Rama University, Kanpur, U.P, India
Corresponding author email i.d.: dr.shital.sonune@jodent.org

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ABSTRACT
Some other elements of nutrition are becoming more essential, such as ensuring good health and preventing illness, in addition to providing the required nutrients for growth and development. The content and safety of food items are of particular concern in the highly processed food industry. Food poisoning, obesity, allergies, cardiovascular disease, and cancer—the 21st-century plague—are all serious issues that need attention to food quality. Probiotics and prebiotics may have a positive impact on a person's health, according to scientific studies. A diverse community of bacteria lives in the human gastrointestinal tract. In addition to coexisting with their host, commensal intestinal bacteria also go through a process known as symbiotic co-evolution. Bacteria that live in the intestines have a wide range of tasks, including producing nourishment for the host, protecting the body against intestinal pathogens, and regulating the immune system. Lactobacilli and bifidobacterial, in particular, are stimulated to proliferate by prebiotic oligosaccharides, which are not digested by humans. Prebiotics are being studied in numerous clinical studies to see what effect they have on human immunity.
Keywords: Prebiotics, Immunity, Human Beings, Clinical Trials, Diseases, Diabetes, Obesity, etc.

I. INTRODUCTION

The immune system is made up of a variety of cells and chemicals that work together to defend the body against pathogens. Two primary branches of the immune system—innate (or non-specific) responses and adaptive (specific) responses—make up the immune system. During microbial challenges, the innate immune system aids in the activation of the adaptive immune system by immediately discriminating between self and non-self. Antigen-specific reactions and immunological memory enable the host to respond more quickly to a previously encountered disease or antigen when it is met again. Cell types that engage in both kinds of responses communicate and interact extensively. Macrophages, for example, have a role in both the innate and adaptive immunological functions of the host. Innate and adaptive immunity are crucially influenced by commensal microorganisms in the gut.

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2D QSAR ANALYSIS OF DIPEPTIDE NITRILE BASED CATHEPSIN S INHIBITORS

Sneha Kushwaha * and Sarvesh Kumar Paliwal

Department of Pharmacy, Banasthali University, Banasthali, Tonk - 304022, Rajasthan, India.

Keywords:

QSAR, Multiple Linear Regression, TSAR, Partial Least Square, dipeptide nitrile

Correspondence to Author:
Sneha Kushwaha

Assistant Professor,
Faculty of Pharmaceutical Sciences,
Rama University, NH-91, GT Road,
Mandhana, Kanpur - 209217, Uttar Pradesh, India.

E-mail: sneha.kush09@gmail.com

ABSTRACT: Cathepsin S enzyme has been considered as an evolving target for the development of novel therapeutic agents for the treatment of numerous autoimmune disorders and other inflammatory diseases. Using TSAR 3.3 2D QSAR has been performed on a series of dipeptide nitrile nucleus. Attempts have been made to derive and comprehend a correlation between biological activity and the generated descriptors. The study was carried out using 37 compounds by division into training and test set by a random selection method. A final QSAR model was generated from a set of 28 compounds with the Leave-out one row (LOO) method of cross-validation to estimate the model's predictive ability. The most significant model with n = 28, r = 0.969, r^2 = 0.939, r^2cv = 0.801, s value = 0.35, f value = 89.07 was developed using MLR analysis. For PLS, the fraction of variance explained = 0.928 was observed. A comparable PLS model with r^2 = 0.928 and Neural model with r^2 = 0.962 indicated good internal predictability of the model. External test set validation provided r^2 values of 0.721 and 0.821 for MLR and PLS analysis, respectively. QSAR model indicated the importance of Steric [Verloop B1 (Subs. 4)], Geometrical [Inertia moment 1 length (Subs. 4), topological [kier Chi V0 (atoms) index (Subs. 2)], and [Kier Chi 4 (path) index (Subs.4)] descriptors for the activity of Cathepsin S inhibitors. This study will be effective in the design of novel and more potent Cathepsin S inhibitors.

INTRODUCTION: The term "Cathepsin" was derived from the Greek word "Kathepsin" which means "digesting" [1, 2]. The human genome consists of a total of 11 human cysteine cathepsins [3]. They are cathepsins L, V, S, K, and F (endopeptidases), cathepsins X, B, C, and H (exopeptidases), and cathepsins O, and W of unknown category [1, 4, 5, 6]. Cathepsin S (gene symbol: CTSS), non-glycosylated cysteine proteinases belong to clan C1 (Papain family) [7, 8]. These are found intracellularly in the endolysosomal vesicles [1, 3, 9].

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These are majorly found in dendritic cells, macrophages, spleen, lymph nodes, monocytes, and/or thymic cortical epithelial cells [10, 11]. The enzyme has an integral role in antigen processing and presentation [12, 13, 14]. Their exclusive dispersal pattern specifies its profound contribution to the immune response [1].

All cysteine proteases are composed of three units- a signal peptide (10-20 amino acids long), a propeptide (variable lengths), and a catalytic domain (214-260 amino acids long) [15]. Signal peptides are responsible for the translocation into the endoplasmic reticulum during mRNA translation. Propeptides act as a skeleton to stimulate the folding of the catalytic domain. It acts as a chaperone to carry the proenzyme to the lysosomal compartment. It acts as a high-affinity reversible inhibitor to block the premature activation of the

CNS & Neurological Disorders - Drug Targets

Title: Emerging Nanotechnology for the Treatment of Alzheimer's Disease

Volume: 23 **Issue:** 6

Author(s): Aditya Singh, Vaseem Ahamad Ansari*, Tarique Mahmood, Farogh Ahsan, Rufaida Wasim, Shubhrat Maheshwari, Mohammad Shariq, Saba Parveen and Arshiya Shamim

Affiliation:

- Department of Pharmacy, Integral University, Dasauli, Kursi Road, Lucknow, UP-226026, India

Keywords: Ursolic acid, Alzheimer's disease, bioavailability, nanotechnology, neurodegenerative, nanoparticle.

Abstract: Nanotechnology is a great choice for medical research, and the green synthesis approach is a novel and better way to synthesize nanoparticles. Biological sources are cost-effective, environmentally friendly, and allow large-scale production of nanoparticles. Naturally obtained 3 β-hydroxy-urs- 12-en-28-oic acids reported for neuroprotective and dendritic structure are reported as solubility enhancers. Plants are free from toxic substances and act as natural capping agents. In this review, the pharmacological properties of ursolic acid (UA) and the structural properties of the dendritic structure are discussed. UA acid appears to have negligible toxicity and immunogenicity, as well as favorable biodistribution, according to the current study, and the dendritic structure improves drug solubility, prevents drug degradation, increases circulation time, and potentially targets by using different pathways with different routes of administration. Nanotechnology is a field in which materials are synthesized at the nanoscale. Nanotechnology could be the next frontier of humankind's technological advancement. Richard Feynman first used the term 'Nanotechnology' in his lecture, "There is Plenty of Room at the Bottom", on 29th December, 1959, and since then, interest has increased in the research on nanoparticles. Nanotechnology is capable of helping humanity by solving major challenges, particularly in neurological disorders like Alzheimer's disease (AD), the most prevalent type, which may account for 60-70% of cases. Other significant forms of dementia include vascular dementia, dementia with Lewy bodies (abnormal protein aggregates that form inside nerve cells), and a number of illnesses that exacerbate frontotemporal dementia. Dementia is an acquired loss of cognition in several cognitive domains that are severe enough to interfere with social or professional functioning. However, dementia frequently co-occurs with other neuropathologies, typically AD with cerebrovascular dysfunction. Clinical presentations show that neurodegenerative diseases are often incurable because patients permanently lose some neurons. A growing body of research suggests that they also advance our knowledge of the processes that are probably crucial for maintaining the health and functionality of the brain. Serious neurological impairment and neuronal death are the main features of neurodegenerative illnesses, which are also extremely crippling ailments. The most prevalent neurodegenerative disorders cause cognitive impairment and dementia, and as average life expectancy rises globally, their effects become more noticeable.

Effect of Different Process of Ropinirol Loaded Nanostructured Lipid Carrier and Their Evaluation: Ex Invivo and In vitro

Sonia Pandey*[1], Arti Gupta[2], Shrikant Joshi[3], Satyendra Mishra[1],Diwya Dwivedi[1]

1- Faculty of Pharmaceutical Sciences, Rama University, Mandhana, U.P,Kanpur-209217
2- Shri Ram Murti Smarak Institutions, CET (Pharmacy) Bareilly, U.P- 243202
3- Maliba Pharmacy College, Uka Tarsadia University, Gopal Vidhya Nagar, Bardoli, Gujrat-394360.

Corresponding Author:
Sonia Pandey
Faculty of Pharmaceutical sciences
Rama University, Mandhana, Kanpur,
Uttar Pradesh, India- 209217.
*Email: sonia136@rediffmail.com
Mob no: +91- 9725128861

Abstract:

Present Investigation of this experiment are aimed primarily the avoidance of hepatic first pass metabolism and to improve therapeutic efficacy for the treatment of Parkinson's disease.

To achieve the goal nine formulations (N1-N9) of NLCs were fabricated by high speed homogenization technique and optimize by 3^2 full factorial designs. The design was validated by extra design check point formulation (N10) and responses were analyzed using Design Expert software 11. The NLCs were evaluated for particle size, polydispersity index (PDI), % entrapment efficiency, in vitro, ex-vivo drug diffusion and histopathological studies. Differential Scanning Calorimetry (DSC) analysis revealed the encapsulation of amorphous form of drug into lipid matrix, while scanning electron microscopy studies indicated the smooth surface. The Fabricated NLCs had a mean particle size of 143.0 nm with narrow size distribution (PDI – 0.178), entrapment efficiency (% EE - 86.42 ± 1.410), and % control drug release (%CDR-91.37± 1.395). Histopathological study showed intact nasal mucosa with no severe signs of damage as compared to drug alone. Results of analysis of variance demonstrated the significance of suggested model. These results clearly provide a lead that above ROPI-NLCs is a potential nanoparticle formulation and could be a promising drug delivery system of Parkinson's. 1467

Keywords: Ropinirole, Nano structure lipid carriers, Factorial design, Histopathology study

DOI Number: 10.48047/nq.2023.21.6.NQ23149 **NeuroQuantology2023;21(6): 1467-1481**

Introduction:

Parkinson's disease (PD) is a progressive neurodegenerative disorder of aging that affects both motor and cognitive function,and the prev[illegible] which is mainly due to the loss o[illegible]aminergic neurons of substanti[illegible] ars compacta of the mid brain and the condition being characterized in major by resting tremors, muscle rigidity and bradykinesia(Schapira 2006). Deficiency of dopamine creates imbalance in normal dopamine: acetylcholine levels, annoying the symptoms of PD(Rudra, Rudra et al. 2007, Salawu, Olokoba et al. 2010). Ropinirole, a

Current Aging Science

Title: Repercussion of Primary Nucleation Pathway: Dementia and Cognitive Impairment

Volume: 16

Author(s): Aditya Singh, Vaseem A. Ansari*, Tariq Mahmood Mahmood, Farogh Ahsan and Saad Mohammed Shubhrat Maheshwari

Affiliation:

- Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, Rama University, Kanpur, India

Keywords: Dementia, Cognitive Impairment, Neurodegenerative, Animal model, Biomarkers

Abstract: Neurodegenerative diseases, such as Alzheimer's, Parkinson's, and prion disease, are characterized by the conversion of normally soluble proteins or peptides into aggregated amyloidal fibrils. These diseases result in the permanent loss of specific types of neurons, making them incurable and devastating. Research on animal models of memory problems mentioned in this article contributes to our knowledge of brain health and functionality. Neurodegenerative disorders, which often lead to cognitive impairment and dementia, are becoming more prevalent as global life expectancy increases. These diseases cause severe neurological impairment and neuronal death, making them highly debilitating. Exploring and understanding these complex diseases offer significant insights into the fundamental processes essential for maintaining brain health. Exploring the intricate mechanisms underlying neurodegenerative diseases not only holds promise for potential treatments but also enhances our understanding of fundamental brain health and functionality. By unraveling the complexities of these disorders, researchers can pave the way for advancements in diagnosis, treatment, and ultimately, improving the lives of individuals affected by neurodegenerative diseases.

WOMEN WITH IMPLANTATION FAILURE: A NARRATIVE REVIEW ON ENDOMETRIAL BIOMARKERS

Shahina Nisha[1], Ashok Kumar Yadav[2*], Sayantan Dutta[3], Meenu[4], Deepika[5], Geeta Rawat[6], Sudhanshu Kumar Jha[7], Deepika Pal[8]

[1] VMY Institute of paramedical sciences Madhuban Mau

[2] IES University Bhopal Madhya Pradesh

[3] Assistant Professor, Faculty of pharmaceutical sciences, Rama University, Mandhana, Kanpur, UttarPradesh, Pin- 209217

[4] Assistant Professor, B.S.Anangpuria Institute of Pharmacy, Faridabad 121004

[5] Principal, CBS College of Pharmacy and Technology, Faridabad 121101

[6] Assistant professor, SGT College of Pharmacy Shree Guru Govind Tricentary University ChanduBudhera Gurugram Haryana- 122006

[7] Central Ayurveda Research Institute, CCRAS, Jhansi (NVARI), Ministry of Ayush, Government of India.

[8] Krishna Pharmacy College, Moradabad Road, Bijnor, Uttar Pradesh- 246701

***Corresponding Author:** Ashok Kumar Yadav

IES University Bhopal Madhya Pradesh

ashokthepharma@gmail.com

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A RESEARCH ON FORMULATION AND EVALUATION OF HERBAL ETHOSOMAL GEL FOR ANALGESIC ACTIVITY

Satyendra Mishra*[1], Sonia Pandey[1], Divya Dwivedi[1], Himanshu Mishra[1] , Himanshu Shukla[1], Himanshu Pratap[1], Sonali Omer[1]

Faculty of Pharmaceutical Sciences, Rama University Kanpur, Uttar Pradesh, India.

a. Satyendra Mishra (Associate Professor in FPHS)
Rama University Kanpur (Faculty of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

b. Sonia Pandey (Professor in FPHS)
Rama University Kanpur (Faculty of Pharmaceutical Sciences)

c. Divya Dwivedi (Assistant Professor in FPHS)
Rama University Kanpur (Faculty of Pharmaceutical Sciences)

d. Himanshu Mishra
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh , India

e. Himanshu Shukla
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217 , Uttar Pradesh, India

f. Himanshu Pratap
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

g. Sonali Omer
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

Corresponding Author
Mr. Satyendra Mishra
Rama University Kanpur (Faculty of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

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Sarita Yadav, Bindu singh yadav, Nandini Chaudhary, Rajneesh Kumar
Department of Pharmacy, Goel Institute of Pharmacy and Sciences, Lucknow, India 226001

Ravi Yadav
Rama University, Kanpur (U.P), India 208001

Shashwat Pandey
Babasaheb Bhimrao Ambedkar University, Lucknow, India 226001

Correspondence

Sarita Yadav
Department of Pharmacy, Goel Institute of Pharmacy and Sciences, Lucknow, India 226001

Email: bindusinghyadav785@gmail.com

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Website: www.crpsonline.com

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A Review Article on Current Pharmacological Status of Cardioprotective Plant

Sarita Yadav, Bindu singh yadav, Nandini Chaudhary, Rajneesh Kumar, Ravi Yadav, Shashwat Pandey

ABSTRACT

Cardiovascular diseases involve abnormalities of the heart and blood vessels, such as coronary heart disease, hypertension, and cerebrovascular disease, and are the main cause of the increase in mortality rate in the world. Herbal plants tend to be very useful to prevent cardiovascular disease. The phytoconstituents of herbal medicinal plants like tannins, alkaloids, saponins, flavonoids, and glycosides that have the ability to prevent cardiovascular diseases. Examples such as *Nerium oleander*, *Amaranthus viridis*, *Ginkgo biloba*, *Daucus carota*, *Gingerol, Tinospora cordifolia etc.* Many studies investigated the cardioprotective effect of these natural products against experimentally-induced myocardial damage, and their results revealed that their potential phytochemicals exhibited significant antioxidant, anti-apoptotic, anti-inflammatory, anti-atherosclerotic activities. The review highlights the promising mechanisms and probable applications of various herbal plants, and their phytochemicals in the prevention and treatment of cardiovascular diseases. The cardioprotective plants contain a wide- variety of bioactive compound involve with diosgenin, isoflavones, sulforaphane, carotinized, catechin and quercetin are increasing the cardio protection and decreases the chances of cardiac abnormalities.

Key words: Cardiovascular diseases, herbal products, phytochemicals, cardioprotective plant, Trichopus zeylanicus, cardiotoxicity.

1. INTRODUCTION

Cardiovascular disease are the group of disorder of the heart and blood vessel, such as cerebrovascular disease, coronary heart disease, peripheral heart disease, rheumatic heart disease, and congenital heart disease, and it increases the mortality and morbidity rate. The risk factors are heart disease, stroke for unhealthy diet, and tobacco. It increases the blood pressure, blood glucose level, and obesity.[1] The use of herbal plants as an antioxidant is increasing as a defensive agent to the various cardiovascular abnormalities.[2] Herbal medicine plays an important role in health care to the large population of the world. The polyphenols are cardioprotective because they inhibit the oxidation of low-density lipoprotein, they decrease the oxygen demand in the patient with myocardial infarction.[3,4] The herbal medicine is used for the treatment of congestive heart failure, systolic hypertension, angina pectoris, atherosclerosis, cerebral insufficiency, and arrhythmia. The medicinal plants that are employed as cardioprotective are *Cichorium intybus*, *Ginkgo biloba*, *Amaranthus Viridis*, Gingerol, *Nerium oleander, Daucus carota, Tinospora cordifolia, Mangifera indica, Hydro cotyle Asiatica Linn.* The oldest medicinal plant which is used for cardiac disease is *digitalis lanata* because the active constituent is present in the steroid glycoside called digoxin. It is also used in the treatment of arrhythmia.[5] *Atropa belladonna* is a plant that contains atropine, used to cure slow heart rate [bradycardia].[6] It contains the soluble phenolic compound is the caffeoyl shikimic acid [CFA]' other, phenolic acid include caffeic acid, protocatechuic acid [PCA], and p- hydroxybenzoic acid [PHBA].[7]

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Formulation and characterization of Miconazole Nanoemulgel for Topical Delivery by Using Natural Oils

Sandeep Kumar[1], Dr. Anasuya Patil[2], Nilam Pramod Nile[3], Ajit Kumar Varma[4], Dipansu Sahu[5], Dhaneshwar kumar vishwakarma[6], Mukesh Kumar Meena[7], Nihar Ranjan Kar [8], Pavan Kumar Padarthi*

1. *Professor, Vivek College of Technical Education, Bijnor*
2. *Associate Professor, Department of Pharmaceutics, KLE College of Pharmacy, II Block Rajajinagar, Bengaluru-560010*
3. *Assistant professor, CSMU school of pharmacy, Panvel, Navi Mumbai ,410221*
4. *Assistant Professor, Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur 209217*
5. *Associate Professor, Shree N.L Patel college of Pharmacy, Umrakh Vidyabharti Trust Bardoli Surat Gujarat India*
6. *HOD, Kailash institute of pharmacy and management plot no BL 1 and 2 Sector 9 Gida Gorakhpur 273209*
7. *Assistant Professor, Department of Pharmaceutical Sciences, Mohanlal Sukhadia University, Udaipur, Rajasthan-313001-India*
8. *Assistant Professor, Centurion University of Technology and Management, Gopalpur, Balasore, Odisha, India, pin-756044*

Corresponding: Pavan Kumar Padarthi

parakripaku@gmail.com

Abstract

The prevalence of pharmaceutical formulations referred to as nanoemulgels (NEG) is increasing due to their inherent capacity to operate as both a nanoemulsion and a gel. These products are widely recognised for their ability to distribute easily, deliver controlled release, offer ease of application, and effectively moisturise dry skin. Numerous studies have provided evidence to support the notion that the use of natural essential oils can enhance the permeability of topical formulations on the skin, hence augmenting the safety and efficacy of medication delivery. In this study, we employed the gelling agents carbopol 943 and hydroxypropyl methylcellulose (HPMC) to create nanoemulsion gels (NEG) with the aim of enhancing the permeation of micronazole for the treatment of candidiasis. Two variations of NEG were prepared, namely Soybean oil-based nanoemulsion gel (Soybean-oil-NEG) and Sunflower oil-based nanoemulsion gel (Sunflower-oil-NEG). In order to enhance the solubility of micronazole and facilitate the formation of a nanoemulsion (NE), a series of excipients were investigated in our experimental study. The size, shape, entrapment efficacy, and drug release of NE droplet particles were assessed in our study. Furthermore, the physicochemical features of the improved nanoemulsion formulation were characterised using techniques such as Fourier transform infrared (FT-IR) spectroscopy and X-ray diffraction (XRD) analysis. In order to generate negative ions (NEGs), the neutral entities (NEs) were introduced into gel matrices. The properties of NEGs encompassed drug

AGE RAGE Pathways: Cardiovascular Disease and Oxidative Stress

Authors

Neeraj Sharma[1], Pavan Kumar[2], Karuna Shanker Shukla[3], Shubhrat Maheshwari[4]

Affiliations

1 Department of Pharmacy, Bhagwant University, Ajmer, India
2 Ph.D scholar of Department of Pharmacy, Bhagwant University, Ajmer, India
3 Goel Institute of Pharmaceutical Sciences, Uttar Pradesh, Luckow, India
4 Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, Rama University, Kanpur, Uttar Pradesh, India

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AGEs, RAGE, cardiovascular disease, antioxidant, anti-inflammatory

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Correspondence

Pavan Kumar, Ph.D
scholar of Department of Pharmacy, Bhagwant University,
Rajasthan Sikar Road
305004 Ajmer
India
Tel.: +91 6399311040
peekush@gmail.com

ABSTRACT

It is well established that Advanced Glycation End Products (AGEs) and their receptor (RAGE) are primarily responsible for the development of cardiovascular disease. As a result, diabetic therapy is very interested in therapeutic strategies that can target the AGE-RAGE axis. The majority of the AGE-RAGE inhibitors showed encouraging outcomes in animal experiments, but more information is needed to completely understand their clinical effects. The main mechanism implicated in the aetiology of cardiovascular disease in people with diabetes is oxidative stress and inflammation mediated by AGE-RAGE interaction. Numerous PPAR-agonists have demonstrated favourable outcomes in the treatment of cardio-metabolic illness situations by inhibiting the AGE-RAGE axis. The body's ubiquitous phenomena of inflammation occur in reaction to environmental stressors such tissue damage, infection by pathogens, or exposure to toxic substances. Rubor (redness), calor (heat), tumour (swelling), colour (pain), and in severe cases, loss of function, are its cardinal symptoms. When exposed, the lungs develop silicotic granulomas with the synthesis of collagen and reticulin fibres. A natural flavonoid called chyrsin has been found to have PPAR-agonist activity as well as antioxidant and anti-inflammatory properties. The RPE insod2 + /animals underwent mononuclear phagocyte-induced apoptosis, which was accompanied with decreased superoxide dismutase 2 (SOD2) and increased superoxide generation. Injections of the serine proteinase inhibitor SERPINA3K decreased proinflammatory factor expression in mice with oxygen-induced retinopathy, decreased ROS production, and increased levels of SOD and GSH.

Introduction

An imbalance between free radicals and antioxidants in the body leads to oxidative stress. Oxygen-containing molecules with an unbalanced number of electrons are known as free radicals. The unequal number makes it simple for them to interact with molecules including DNA, proteins, and lipids. The term "advanced glycation end products," or "AGEs," refers to a broad class of compounds that are created and accumulated as a result of the advanced glycation process. AGE formation is enhanced by diseases like diabetes, renal failure, inflammation, neurodegeneration, and old age. AGEs are also present in cigarettes and food products [1]. Therefore, both endogenous synthesis and exogenous intake of AGEs cause vascular homeostasis to be disrupted. First, AGEs have the potential to crosslink long-lived molecules in the basement membranes, including collagen, leading to processes that increase vascular permeability and weaken structural integrity. This is known as "vascular stiffening". "Advanced glycation end products" refers to proteins, lipids, and nucleic acids that have been permanently altered by reducing sugars or sugar-derived substances (AGEs) [2]. The phrase "oxidative stress" is frequently used to describe a disruption in the pro-oxidant-antioxidant equilibrium that may result in damage. However, in the instance of aldehyde poisoning, oxidative stress is

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Review Article

Role of Essential Nutrients for Cardiovascular Health: Risk and Management of Drug Interaction

Jitendra Singh Yadav[1], **Sonia Pandey**[2], **Arti Gupta**[1*]

[1]Department of Pharmacy, Shri Ram Murti Smarak College of Engineering and Technology, Uttar Pradesh, India
[2]Department of Pharmaceutical Sciences, Rama University, Uttar Pradesh, India

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ABSTRACT

Background: Chronic diseases account for about 59% of the 56.5 million deaths reported worldwide and 46% of the global burden of the disease. Nearly half of deaths from chronic disease are attributed to cardiovascular disease, obesity, and diabetes. The present review will give an outline about the role of essential nutrients on cardiovascular health, chemistry, dose, drug metabolism and pharmacokinetics, mechanism of action, risk, and discuss the evidence-based risk and management of drug interaction.

The information was collected from books, and electronic search (PubMed, Science Direct, Lilca and Scielo) and PRISMA.

Discussion: Nutrient in the form of pharmaceuticals available can be used for the prevention and treatment of cardiac diseases. Adverse drug reactions, nutrients-drug interactions, and iatrogenic diseases have been identified as significant factors responsible for patient morbidity and mortality. A better understanding of these mechanisms and recent developments in laboratory technology can help assess possible drug interactions when drugs are prescribed at the same time. Increased knowledge of inter-individual variation in drug decomposition capacity and recent results related to nutrient and nutraceutical influence can be used to reduce adverse drug reactions and disease iatrogenic.

Conclusion: There is a need to enhance and foster interdisciplinary communication between medical herbalists, physicians, and dieticians. According to dieticians food may interact with conventional drugs and that drugs may affect nutritional status, in order to provide the patient with proper dietary suggestions, and to allow the maximum effectiveness and safety of drug therapy, while preserving/correcting the nutritional status.

Keywords: Food, Supplements, Cardiovascular drugs, Interactions, Risk management

***Correspondence:** Arti Gupta, Department of Pharmacy, Shri Ram Murti Smarak College of Engineering and Technology, Uttar Pradesh, India, E-mail: aarticognosy@gmail.com

INTRODUCTION

Diet and nutrition are important factors in the promotion and maintenance of good health throughout life and also play as a risk factor for chronic diseases (Matsudo V, *et al*., 2002). As per calculations, in 2001, chronic diseases contributed approximately 60% of the 56.5 million total reported deaths in the world contributed by chronic diseases and approximately 46% of the global burden of disease (WHO, 2002). The share of the NCD burden is expected to reach 57% by 2020. Nearly half of deaths from chronic diseases are caused by cardiovascular disease. The 2016 Heart Disease and Stroke Statistics update of the AHA reported that the overall death rate from CHD was 102.6 per 100,000 (Mozaffarian D, *et al*., 2016). There is a strong relationship between SCD and CHD (Montagnana M, *et al*., 2008). Clinical and post-mortem studies as well as data from death certificates revealed that 62%-85% of patients who suffer out-of-hospital SCD have evidence of prior CHD, 10% have other structural cardiac abnormalities, and 5% have no structural cardiac abnormality (Kannel WB and Thomas Jr HE, 1982; Zheng ZJ, *et al*., 2001). A surveillance study of SCD from Ireland concluded that the majority of cases occurred at home and that successful resuscitation of SCD was especially associated with ventricular fibrillation as presenting rhythm (Byrne R, *et al*., 2008). IHD was also the greatest single cause of death in 2000, accounting for an estimated 6.0 million deaths. Individual populations face different challenges and each population has unique health burdens, however, CVD remains one of the greatest health challenges both nationally and worldwide (McAloon CJ, *et al*., 2016). Obesity is associated with some of the major risk factors for CVD, such as hypertension and low concentrations of High-Density Lipoprotein-cholesterol (HDL-cholesterol) (WHO, 2002). Arterial [illegible]re and Hypercholesterolemia are key factors in the development of CVD.

LITERATURE REVIEW

Extensive study has been done in order to derive the solution to the question at hand. The majority of the study conducted revolves around the usage of e-books, most of which focused exclusively on essential nutrients. Additionally, government websites provided more information regarding what types of medications are used on cardiovascular diseases, as well as the short-term and long-term effects of their use. Furthermore, a couple of case studies detailed some students in India, and how their health improved with a conversion to a essential nutrients. The sources that are being used are several academic, peer-reviewed research papers, books, journals, and case studies. The mode of methodology that will be used to carry out the research is mixed between data analysis and experiments given in the case studies.

There has been a boom in their sales as patients rush to self-medicate, either in the hope that these products will be effective in treating diseases unsatisfactorily treated with pharmaceuticals, or that the adverse effects of some pharmaceuticals may be avoided. On whole, 'Nutraceuticals' has led to the new era of medicine and health, in which the food industry has become a research-oriented sector and that is used for the improvement of health, by preventing or treating disease (Das L, *et al*., 2012). The relation between nutraceuticals and other health products for various diseases are presented in *Figure 1*.

Nutraceuticals in the form of macronutrients, micronutrients algae, and herbs are recommended together with physical exercise for prevention and treatment of CVD (Muredzi ED, 2023). *Table 1* presents some of the more recognizable nutraceuticals substances grouped according to food-source providers (Wildman RE, 2016).

Based on Clinical Research Matrix Metalloprotease (MMP) Inhibitors to Promote Diabetic Wound Healing

Authors
Jagat Pal Yadav

Affiliations
Faculty of Pharmaceutical Sciences, Rama University, Kanpur, India

Key words
MMPs, diabetic wound, NF-kB, FOXO-1, stem cells

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Georg Thieme Verlag, Rüdigerstraße 14,
70469 Stuttgart, Germany

Correspondence
Jagat Pal Yadav
Faculty of Pharmaceutical Sciences,
Rama University
Kanpur, 209217
India
Tel.: 8853053800
j.p.yaduvansi@gmail.com

ABSTRACT

Chronic inflammation is a common factor in obesity, diabetes mellitus, and the complications of diabetes, including diabetic wounds. These ulcers are characterized by persistent lesions that are challenging to heal, significantly decreasing patients' quality of life and imposing a substantial financial burden on society. MMP are zinc endopeptidases that play a role in wound healing in response to various stimuli, including diabetes mellitus. MMP levels fluctuate throughout the wound healing process in diabetic patients' serum, skin tissues, and wound fluid, indicating their potential as biomarkers for diabetic foot ulcers. Targeting MMP has emerged as a promising strategy for treating diabetic wounds, as these enzymes are involved in critical biological processes related to wound healing, including extracellular matrix secretion, angiogenesis, granulation tissue formation, collagen growth, re-epithelization, inflammatory response, and oxidative stress.

ABBREVIATIONS

Ang-II	Angiotensin-II
AGEs	Advanced glycation end products
AGEs-BSA	Glycation end products-bovine serum albumin
DWs	Diabetic wounds
DNA	Deoxyribonucleic acid
DAPT	Dual antiplatelet therapy
DM	Diabetes mellitus
Enos	Endothelial nitric oxide synthase
ECM	Extracellular matrix
GTP-RhoA	Guanosine triphosphatase-Ras homologue family member A
HMG-CoA	3-Hydroxy-3-methylglutaryl-coenzyme A reductase
IGF-1	Insulin-like growth factor-1
MAPK	Mitogen-activated protein kinase
mRNA	M[illegible]bonucleic acid
MMP	Matrix metalloprotease
MSCs	Mesenchymal stem cells
NICD	Notch intracellular domain
NF-κB	Nuclear factor kappa B
ROS	Reactive oxygen species
ROCK-1	Rho-associated coiled-coil containing protein kinase-1
RhoA	Ras homologue family member A
RAGE	Receptor for advanced glycation end products
STZ	Streptozotocin
SHED	Stem cells derived from human exfoliated deciduous teeth
TIMPs	Tissue inhibitors of metalloproteinase
T2DM	Type 2 diabetes mellitus
TNF-α	Tumor necrosis factor alpha
VLUs	Venous leg ulcers

Parkinson's disease in experimental animals is improved by methanolic root extract of *citrullus colocynthis*

Dr. Beda Durga Prasad[1], Rajesh Singh Chauhan[2], Akanksha Pandey[3], Dr. Sarita Garg, Priya Kumar[5], Satyendra Kumar Mishra[6], Prof. Dr. Om M. Bagade[7], Aditya Kumar Dash[8]*, Pranshul Sethi[9]

[1] *GITAM School of Pharmacy, Rudraram (V), Hyderabad, Sangareddy, 502329, Telangana*
[2] *Pt Rajendra Prasad Smarak College of Pharmacy, Kajari Niranjanpur, 262122*
[3] *NIMS University, Jaipur*
[4] *Vaish Institute of Pharmaceutical Education and Research, Rohtak*
[5] *Dr. APJ Abdul Kalam Technical University, Lucknow*
[6] *Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur Pin code-209217*
[7] *Associate Processor, Vishwakarma University School of Pharmacy, Pune-48*
[8] *Acoustics & Biochemistry Laboratory, PG Department of Botany and Biotechnology, Ravenshaw University, Cuttack, Odisha 753003, India*
[9] *IIMT College of Medical Sciences, IIMT University, Meerut*

Corresponding Authors Details:Aditya Kumar Dash
aditya_kumar_dash@hotmail.com

Abstract: *Citrullus colocynthis (CC)* has traditionally been used in Africa, Asia, and Europe for a number of reasons. Citrullus colocynthis has been utilised in a number of polyherbal and monoherbal formulations in the Ayurvedic medical system to treat Kamp-vaat (Parkinson's illness). The goal of the research was to evaluate how well Tacrine-induced catalepy, hypolocomotion, and other biochemical changes were protected against by *Citrullus colocynthis* root methanolic extracts. Materials and Procedures The percolation method was used to create a methanolic extract of *Citrullus colocynthis* root. Tacrine (2.5 mg/kg, i.p.) was administered to cause orofacial dyskinesia and hypolocomotion, and the quantity of vacuous chewing movements (VCM), orofacial bursts (OB), and locomotor activity were quantified. All of the rats were monitored for Tacrine-induced catalepsy over the course of 1 to 5 days.Free radical scavenging activity was measured using the ABTS + assay. Methanolic extract affected the forebrain's superoxide dismutase (SOD), catalase (CAT), glutathione reductase (GSH), and lipid peroxidation (LPO) inhibition. Results: During the investigation, root ethanolic extract significantly decreased vacuous chewing movements, other motor manifestations including hypolocomotion, and catalepsy. It also significantly enhanced locomotion and rearing in the open-field test. Additionally, the root extract's capacity to scavenge free radicals was dose-dependent. The antioxidant action of plant extract is shown by increases in GSH and antioxidant enzymes like SOD and CAT. Our findings are in line with the usage of *Citrullus colocynthis* root extract for Parkinson's disease treatment that has been used traditionally.

Key words: *Citrullus colocynthis*, Motor manifestation, Tacrine, Biochemical Estimation, Free radical scavenging, Membrane stabilizing

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Saraca Indica Leaf Extract Hydrogel for Wound Healing: Development and Evaluation

Dr. Anil Ahuja[1], Km Reena[2], Dr. Niraj Gupta[4], Kartikey Pandey[5], Sharad Kumar Tripathi[6], Pratik Prakash Terse[6], Sayantan Dutta[7], Ashutosh Kumar[8*]

[1] Professor & Principal, Sanskriti University,Chhata Mathura- 281401

[2] Assistant Professor, Invertis University, Bareilly, Invertis Village, National Highway, Bareilly-Lucknow, NH-24, Bareilly, U.P, India, 243123

[3] College of Pharmacy Agra, Dr. A.P.J. Abdul Kalam Technical University, Lucknow, Uttar Pradesh, 282001

[4] Assistant Professor, Krishanarpit institute of pharmacy Prayagraj

[5] Assistant Professor, Department of Life Sciences, Arni University, Kangra, Himachal Pradesh, India, 176401

[6] Assistant Professor, Shree Pushpasen Sawant college of Pharmacy, on Mumbai Goa Hwy, Post Digas, Tal. Kudal, District Sindhudurg, Rumadgaon, Maharashtra 416521

[7] Assistant Professor, Faculty of pharmaceutical sciences, Rama University, Mandhana, Kanpur, Uttar Pradesh, 209217

[8] Rameshwaram Institute of Technology and Management. Sitapur Rd, Opposite AKTU campus, Govind Puram, Mubarakpur, Lucknow, Uttar Pradesh 227202

Corresponding Author Details:Ashutosh Kumar,
akumarashutosh800@gmail.com

ABSTRACT- Hydrophilic polymers, such as hydrogels, have long been employed as biomaterials. Because they are biocompatible, non-toxic, and extremely absorbent, they are frequently utilised in medicine and cosmetics.It has been shown that the Saraca Indica leaf extract contains both wound-healing and anti-inflammatory activities. The goal of this work was to create a hydrogel from the leaves extract of Sarraca Indica that was mixed with several gelling agents, including Carbapol 934, Carbapol 940, and HPMC.The study's findings showed that both the medication and the excipients blended well with gelling agents. The outcomes were assessed using many criteria, including pH, viscosity, spreadability, and in vitro drug release. All of the settings worked well.

KEYWORDS- *Saraca Indica, Saraca Indica* Hydrogel, Wound Healing

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Saraca Indica Leaf Extract Hydrogel for Wound Healing: Development and Evaluation

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[1] Professor & Principal, Sanskriti University,Chhata Mathura- 281401

[2] Assistant Professor, Invertis University, Bareilly, Invertis Village, National Highway, Bareilly-Lucknow, NH-24, Bareilly, U.P, India, 243123

[3] College of Pharmacy Agra, Dr. A.P.J. Abdul Kalam Technical University, Lucknow, Uttar Pradesh, 282001

[4] Assistant Professor, Krishanarpit institute of pharmacy Prayagraj

[5] Assistant Professor, Department of Life Sciences, Arni University, Kangra, Himachal Pradesh, India, 176401

[6] Assistant Professor, Shree Pushpasen Sawant college of Pharmacy, on Mumbai Goa Hwy, Post Digas, Tal. Kudal, District Sindhudurg, Rumadgaon, Maharashtra 416521

[7] Assistant Professor, Faculty of pharmaceutical sciences, Rama University, Mandhana, Kanpur, Uttar Pradesh, 209217

[8] Rameshwaram Institute of Technology and Management. Sitapur Rd, Opposite AKTU campus, Govind Puram, Mubarakpur, Lucknow, Uttar Pradesh 227202

Corresponding Author Details:Ashutosh Kumar,
akumarashutosh800@gmail.com

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KEYWORDS- *Saraca Indica, Saraca Indica* Hydrogel, Wound Healing

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Formulation and Characterization of Toremifene Self-Microemulsifying Drug Delivery System for Enhancement of Oral Bioavailability

Ajit Kumar Varma [1], Sarvan[2], Sahil Kumar[3], Rani Kumari[4], Ravi Kumar[5], Rajeev Ranjan[6], Rajat[7], Nihar Ranjan Kar [8], Dr. Mohit Kotnala*

1. Assistant Professor, Faculty of Pharmaceutical Sciences, Rama University, Kanpur(U.P.),India-209217
2. Scholar, HIMT College Of Pharmacy, Plot No. 08 Institutional Area Knowledge Park-I Greater Noida, Pin-201301, Uttar Pradesh
3. Assistant Professor, Aakash Institute of Medical Sciences Nalagarh, Solan - 174101
4. Assistant Professor, Institute of pharmacy, Gopal Narayan Singh University jamuhar Sasaram Bihar -821305
5. Assistant Professor, Faculty of pharmaceutical sciences, Rama university Kanpur Kanpur(U.P.), India-209217
6. Assistant Professor, University Department of Chemistry, DSPM University, Ranchi 834008
7. Assistant Professor, College of Pharmacy, RIMT University, Mandi Gobindgarh Punjab147301
8. Associate Professor, Centurion University of Technology And Management, Gopalpur, Balasore, Odisha, India, Pin-756044

Corresponding: Dr. Mohit Kotnala

Email Id: mohitkotnala198@gmail.com

Affiliation: Science Teacher, Bloom Charter Education, Ain Al Fayedah School-6021 Abu Dhabi United Arab

Abstract: The limited water solubility and dissolution of drugs classified under the Biopharmaceutics Classification System (BCS) class II category provide constraints on their oral bioavailability. In the present study, a self-micro emulsifying drug delivery system (SMEDDS) was employed to enhance the aqueous solubility and oral bioavailability of toremifene, which belongs to the Biopharmaceutics Classification System (BCS) class II category. The selection of Oleic Acid, Transcutol-P, and Span 20 as the oil, surfactant combination, and cosurfactant, respectively, was based on the solubility. The optimal composition (Oleic Acid / Transcutol-P / Span 20 in a volume ratio) for toremifene, which exhibits a small droplet size (132.1 nm) and consistent microemulsification was determined by the use of pseudo-ternary phase diagrams. Differential

Review

Thieme

Consequence of Dementia and Cognitive Impairment by Primary Nucleation Pathway

Authors

Aditya Singh[1], Vaseem Ahamad Ansari[1], Tarique Mahmood Ansari[1], Syed Misabah Hasan[1], Farogh Ahsan[1], Kuldeep Singh[1], Rufaida Wasim[1], Shubhrat Maheshwari[2], Asad Ahmad[1]

Affiliations

1 Faculty of Pharmacy, Integral University, Lucknow, India
2 Faculty of Pharmaceutical Sciences, Rama University, Kanpur, India

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Georg Thieme Verlag, Rüdigerstraße 14, 70469 Stuttgart, Germany

Correspondence

Dr. Vaseem Ahamad Ansari
Faculty of Pharmacy
Integral University
226026 Lucknow
India
Tel.: 9936495523
vaseem9in@gmail.com

ABSTRACT

An acquired loss of cognition in several cognitive domains that is severe enough to interfere with social or professional functioning is called dementia. As well as a moderately in-depth mental status examination by a clinician to identify impairments in memory, language, attention, visuospatial cognition, such as spatial orientation, executive function, and mood, the diagnosis of dementia requires a history evaluating for cognitive decline and impairment in daily activities, with confirmation from a close friend or family member. The start and organization of the cognitive assessment can be helped by short screening tests for cognitive impairment. Clinical presentations show that neurodegenerative diseases are often incurable because patients permanently lose some types of neurons. It has been determined through an assessment that, at best, our understanding of the underlying processes is still rudimentary, which presents exciting new targets for further study as well as the development of diagnostics and drugs. A growing body of research suggests that they also advance our knowledge of the processes that are probably crucial for maintaining the health and functionality of the brain. We concentrate on a number of the animal models of memory problems that have been mentioned in this review article because dementia has numerous etiologies. Serious neurological impairment and neuronal death are the main features of neurodegenerative illnesses, which are also extremely crippling ailments. The most prevalent neurodegenerative disorders are followed by those primary nucleation pathways responsible for cognitive impairment and dementia.

Introduction

Complex and significant medical illnesses that primarily impact the neurons in the human brain are known as neurodegenerative disorders, or, to be more specific, neurodegenerative diseases. These ailments cause abnormalities of the central nervous system (CNS), which in turn cause the progressive degeneration of neural tissues, including the death of neurons [1]. Neurodegenerative disorders and their associated diseases do not have natural treatments on their own because neurons cannot self-regenerate after dying from neurodegenerative cell death or suffering significant neural tissue damage. To increase our fundamental and crucial understanding of the lethal neurodegenerative diseases, a large array of research has been done during the past few decades. The term "regeneration" describes the growth of new neural tissue. In addition to the regeneration of new neurons, glia, myelin, and synapses, it also involves the restoration of vital sensory, motor, emotional, and cognitive capacities. Unfortunately, compared to other body systems, regeneration in the nervous system is extremely slow. The loss of brain nerve cells and their connections results in dementia. They are also known to have cognitive problems (▶ **Fig. 1**). They influence daily actions with the advancement of systems biology, it is now possible to better comprehend complicated diseases and speed up the creation and repositioning of drugs [2–5]. Utilizing a variety of high throughput/omics technologies, systems biology

Recent Patents On Nanotechnology

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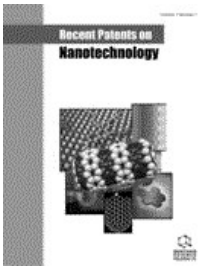
Dendrimers: Patents For Alzheimer’s Disease.

Authors:
Aditya Singh and Shubhrat Maheshwari

Affiliation:
Faculty of Pharmaceutical Sciences Rama University Mandhana, Bithoor Road, Kanpur, Uttar Pradesh, 209217, India

Abstract:
Cells and nervous system connections that are crucial for movement, coordination, strength, sensation, and thought are gradually damaged in neurodegenerative illnesses. Amyloid beta (Aβ)-accumulating macromolecules in the brain are the primary cause of the disease's chronic symptoms, according to analysis carried out during the last 20 years. Plaques and clumps of amyloid- build up in the brain, obstructing neuronal signals and destroying neural connections. Tau, a protein that results in the formation of "neurofibrillary tangles" in the brain, another hallmark of neuronal death, has been the focus of a lot of research. Dendrimers Delivery (DDs) is one of the most promising advancements in nanotechnology for biomedical applications, particularly drug delivery. Some of the main categories of dendrimers employed in the successful management of neurodegenerative illnesses are polyamidoamine dendrimers (PAMAM) dendrimers, polypropylenimine dendrimers (PPI), Poly-l-lysine dendrimers (PLL), and carbosilane dendrimers. The tight blood-brain barrier (BBB), which limits the entry of medications or therapeutic agents, makes it difficult to treat central nervous system disorders. Dendrimers have attracted the attention of scientists more than other non-invasive methods of drug delivery across the BBB and improve the uptake of medicines in the brain's target tissues. The major benefits of dendrimers include their adaptability, biocompatibility, ability to load pharmaceuticals into the core and surface, and nanosize. This review has updated the status of the patent and clinical trials literature pertaining to dendrimer use in AD.



Receptor for Advanced Glycation End Products: Dementia and Cognitive Impairment

Authors

Aditya Singh[1], Vaseem Ahamad Ansari[1], Tarique Mahmood[1], Farogh Ahsan[1], Rufaida Wasim[1], Mohammad Shariq[1], Saba Parveen[1], Shubhrat Maheshwari[2]

Affiliations

1 Department of Pharmacy, Faculty of Pharmacy, Integral University, Lucknow, India

2 Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Bithoor Road, Kanpur, Uttar Pradesh, India

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Georg Thieme Verlag, Rüdigerstraße 14, 70469 Stuttgart, Germany

Correspondence

Dr. Vaseem Ahamad Ansari
Associate Professor, Faculty of Pharmacy
Integral University
226026 Lucknow
India
Tel.: 9936495523
vaseem9in@gmail.com

ABSTRACT

The pathophysiological processes of dementia and cognitive impairment are linked to advanced glycation end products (AGEs) and their receptor (RAGE).The neurofibrillary tangles (NFTs) of abnormally hyperphosphorylated tau protein and senile plaques (SPs), which are brought on by amyloid beta (Aβ) deposition, are the hallmarks of Alzheimer's disease (AD), a progressive neurodegenerative condition. Advanced glycation end products that are produced as a result of vascular dysfunction are bound by the receptor for advanced glycation end products (RAGE). Dementia and cognitive impairment could develop when RAGE binds to Aβ and produces reactive oxygen species, aggravating Aβ buildup and ultimately resulting in SPs and NFTs. RAGE could be a more powerful biomarker than Aβ because it is implicated in early AD. The resident immune cells in the brain known as microglia are essential for healthy brain function. Microglia is prominent in the amyloid plaques' outside border as well as their central region in Alzheimer's disease. Microglial cells, in the opinion of some authors, actively contribute to the formation of amyloid plaques. In this review, we first discuss the early diagnosis of dementia and cognitive impairment, and then detail the interaction between RAGE and Aβ and Tau that is necessary to cause dementia and cognitive impairment pathology, and it is anticipated that the creation of RAGE probes will help in the diagnosis and treatment of dementia and cognitive impairment.

Introduction

AGEs are a class of chemicals that are produced nonenzymatically by joining sugars to proteins, lipids, or nucleic acids. They cause protein modification and cross-linking. In addition, AGEs or other RAGE ligands, such as amyloid-, that activate the AGE receptor (RAGE), cause an inflammatory reaction that leads to the upregulation of the receptor. AGEs build up over the course of life, particularly in tissues with a long lifespan [1]. Hyperglycemia, as well as oxidative and inflammatory stress, is known to cause excessive buildup. In the brain, AGEs colocalize with AD-related proteins such tau, neurofibrillary tangles, and amyloid beta. RAGE is hypothesized to play a role in cerebral amyloid- buildup by aiding its transport through the blood-brain barrier, as well as in neuronal degeneration and the creation of fibrous tangles. It is also implicated in the pathophysiological processes of dementia [2]. Proteins, lipids, and nucleic acids that experience irreversible alteration due to reducing sugars or sugar-derived substances are collectively referred to as "AGEs." The Maillard reaction is a set of chemical processes that results in the development of AGEs. The Maillard reaction causes both the "browning" of food during cooking and the "browning" of tissue that is observed with ageing. Early glycation, the first chemical process, is the irreversible nonenzymatic binding of a sugar to amino acid groups on proteins, lipids, or nucleic acids [3]. The adduction of a carbohydrate to another biomolecule, such as

pharmaceuticals

MDPI

Review

Nitrogen Containing Heterocycles as Anticancer Agents: A Medicinal Chemistry Perspective

Adarsh Kumar [1,†], Ankit Kumar Singh [1,†], Harshwardhan Singh [1], Veena Vijayan [1], Deepak Kumar [1], Jashwanth Naik [1], Suresh Thareja [1], Jagat Pal Yadav [2], Prateek Pathak [3], Maria Grishina [3], Amita Verma [4], Habibullah Khalilullah [5], Mariusz Jaremko [6], Abdul-Hamid Emwas [7] and Pradeep Kumar [1,*]

[1] Department of Pharmaceutical Sciences and Natural Products, Central University of Punjab, Ghudda, Bathinda 151401, India
[2] Pharmacology Research Laboratory, Faculty of Pharmaceutical Sciences, Rama University, Kanpur 209217, India
[3] Laboratory of Computational Modeling of Drugs, Higher Medical and Biological School, South Ural State University, 454008 Chelyabinsk, Russia
[4] Bioorganic and Medicinal Chemistry Research Laboratory, Department of Pharmaceutical Sciences, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj 211007, India
[5] Department of Pharmaceutical Chemistry and Pharmacognosy, Unaizah College of Pharmacy, Qassim University, Unayzah 51911, Saudi Arabia
[6] Smart-Health Initiative and Red Sea Research Center, Division of Biological and Environmental Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal 23955-6900, Saudi Arabia
[7] Core Labs, King Abdullah University of Science and Technology, Thuwal 23955-6900, Saudi Arabia
* Correspondence: pradeepyadav27@gmail.com
† These authors contributed equally to this work.

Abstract: Cancer is one of the major healthcare challenges across the globe. Several anticancer drugs are available on the market but they either lack specificity or have poor safety, severe side effects, and suffer from resistance. So, there is a dire need to develop safer and target-specific anticancer drugs. More than 85% of all physiologically active pharmaceuticals are heterocycles or contain at least one heteroatom. Nitrogen heterocycles constituting the most common heterocyclic framework. In this study, we have compiled the FDA approved heterocyclic drugs with nitrogen atoms and their pharmacological properties. Moreover, we have reported nitrogen containing heterocycles, including pyrimidine, quinolone, carbazole, pyridine, imidazole, benzimidazole, triazole, β-lactam, indole, pyrazole, quinazoline, quinoxaline, isatin, pyrrolo-benzodiazepines, and pyrido[2,3-d]pyrimidines, which are used in the treatment of different types of cancer, concurrently covering the biochemical mechanisms of action and cellular targets.

Keywords: heterocyclic; anti-cancer; FDA; nitrogen-containing heterocyclic; biological activity

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1. Introduction

Carcinoma is the abnormal growth of normal cells that typically grow beyond their original boundaries, invade surrounding areas, spread to other organs, and result in metastasis, which is one of the main causes of cancer-related death, the second most common cause of deaths across the globe [1]. Around 10.0 million cancer-related fatalities (9.9 million excluding squamous cell carcinoma) and 19.3 million new cases of cancer (18.1 million excluding squamous cells carcinoma) were estimated globally by 2020. Up to 25% of cancer cases are caused by cancer-causing illnesses such as hepatitis as well as human papillomavirus infections. The most common malignancies in both genders are breast, lung, stomach, colorectal, thyroid, liver, and ovarian. The most fatal cancers are lung (1.8 million), liver (830,000), stomach (769,000), breast cancer (627,000), and colorectal (935,000). The most commonly diagnosed cancers worldwide are lung (2.2 million), breast (2.09 million), colorectal (1.9 million), prostate (1.28 million), skin (1.04 million), and stomach (1.04 million).

Original Article

The Impact Of High Homocysteine On Coronary Atherosclerosis And Hdl Function In Patients With Medium Hdl Level

*Dr. Aniketa Sharma, **Dr. Anurag Rawat, ***Dr. Manjusha Hivre,****Jagat Pal Yadav, ***** Santhebennur Jayappa Veeresh

*Assistant Professor, Department of Medicine, DR. YSP Government Medical College Nahan, Dist:- Sirmour, H.P., Email:- aniketa.shonyo786@gmail.com
**Associate Professor, Department of Cardiology, Himalayan Institute of Medical Science, Dehradun, Uttarakhand, Email:- anuragwt@gmail.com
***Assistant Professor, Department of Biochemistry, MGM Medical College, Aurangabad, Maharashtra, Email:- drmanjushahivre@gmail.com
****Assistant Professor, Department of Pharmacology, Rama University, Kanpur, Email:- j.p.yaduvansi@gmail.com
*****Assistant Professor, Department of Studies in Food Technology, Davangere University, Shivagangotri, Devangere, Karnataka, Email:- veereshsj@gmail.com
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Abstract

This research paper has been elevated with the homocysteine atherosclerosis promoted through the stress-increased oxidant, impaired with an endothelial function as well as thrombosis of induction. It is also increasing the role within the HMG activity Co A reductase that can turn cholesterol increases synthesis. It is increased with the cholesterol-promoted level of atherosclerosis as well as since it is such a risk factor in CAD. the levels of serum homocysteine where it was found significantly higher in CAD and it is with than the no subjects of CAD. The high homocysteine levels have damaged the inside that increasing as well as arteries' risk of blood-forming clots. It can increase with the heart attack risk, stroke, and some other diseases of the heart as well as blood disorders vessel. High homocysteine levels can increase the blood LDL cholesterol, which can be associated with damage in arteries lining as well as atherosclerosis narrowing of arteries as well as hardening. Hcy considered concentration as a factor of risk for cardiovascular disease as well as it can be also associated with hypertension. it is such as diagnosed with invasiveness with acetylcholine testing provocation, and even it is after adjusting with the risk of cardiovascular covariables.

Keywords: Coronary, Nonobstructive, CEMD, HDL, CAD, Homocysteine, Homocysteine

1. Introduction

The high homocysteine in coronary atherosclerosis is such, a general elderly population man, which high level of homocysteine common. It is strongly associated with coronary prevalence heart disease as well as cerebrovascular disease. This is a strong predictive factor for fractal cerebrovascular disease in men and it is without hypertension but it is less so for coronary heart disease. HDL is cholesterol, and it is sometimes known as good cholesterol, it also absorbs the cholesterol in human blood as well as carried it back into the liver. It is the liver that flushes into the body. It is high levels of HDL cholesterol that lower the risk of stroke and heart disease.

2. Literature Review

Coronary endothelial dysfunction is as earliest clinically form detectable of coronary atherosclerosis. It is 60% of patients are presenting with nonobstructive and angina artery disease which is clinically indicating that coronary

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Review article

An updated review of Chinese skullcap (*Scutellaria baicalensis*): Emphasis on phytochemical constituents and pharmacological attributes

Dilip Kumar Chanchal [a], Kuldeep Singh [b,*], Bharat Bhushan [c], Jitendra Singh Chaudhary [d], Shivendra Kumar [b], Ajit Kumar Varma [e], Neha Agnihotri [f], Akash Garg [g]

[a] Department of Pharmacognosy, Smt. Vidyawati College of Pharmacy, Jhansi, Uttar Pradesh, India
[b] Department of Pharmacology, Rajiv Academy for Pharmacy, Mathura Uttar Pradesh, India
[c] Department of Pharmacology, Institute of Pharmaceutical Research, GLA University, Mathura Uttar Pradesh, India
[d] Department of Pharmaceutics, Smt. Vidyawati College of Pharmacy, Jhansi, Uttar Pradesh, India
[e] Department of Pharmaceutics, Rama University, Mandhana, Kanpur, Uttar Pradesh, India
[f] Department of Pharmaceutics, Maharana Pratap College of Pharmacy, Kothi, Mandhana, Kanpur, Uttar Pradesh, India
[g] Department of Pharmaceutics, Rajiv Academy for Pharmacy, Mathura Uttar Pradesh, India

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ABSTRACT

Chinese Skullcap (*Scutellaria baicalensis*) is a traditional medicinal herb with a rich history of use in Traditional Chinese Medicine (TCM). This review aims to provide an updated overview of the phytochemical constituents and pharmacological attributes of Chinese Skullcap, shedding light on its potential therapeutic applications. A comprehensive search of scientific databases, including PubMed, Scopus, and Web of Science, was conducted to gather relevant literature published up to September 2023. Keywords such as "*Scutellaria baicalensis*," "phytochemicals," and "pharmacological properties" were used to identify pertinent studies. Chinese Skullcap was found to contain a diverse array of phytochemical constituents, including flavonoids, alkaloids, and terpenoids, with baicalin and baicalein being the most prominent bioactive compounds. These compounds have demonstrated a wide range of pharmacological activities, including anti-inflammatory, antioxidant, anti-cancer, neuroprotective, and hepatoprotective effects. Additionally, Chinese Skullcap has been investigated for its potential in treating various diseases, such as cancer, cardiovascular disorders, and neurodegenerative conditions. Chinese Skullcap represents a compelling avenue for future therapeutic development, emphasizing the ongoing need for scientific exploration and clinical investigation.

1. Introduction

Chinese skullcap, scientifically known as *Scutellaria baicalensis*, belongs to the mint family, *Lamiaceae*, and is a perennial herb widely used in traditional medicine throughout East Asia [1]. It is recognized for its potent therapeutic properties and has been a staple in Traditional Chinese Medicine (TCM) for thousands of years [2]. The plant's roots, often referred to as *Radix Scutellariae* or Huang Qin in Chinese, are the primary source of its medicinal properties [3]. They are typically harvested in the spring or fall, then dried and used either in their natural form or processed into powders, tinctures, or pills [4,5].

Scutellaria baicalensis has a rich history of use in the treatment of various health conditions, including inflammation, cancer, bacterial and viral infections, cardiovascular diseases, and neurological disorders. The increasing global interest in herbal remedies, along with the documented efficacy of *Scutellaria baicalensis* in numerous pharmacological applications, has led to a surge in research efforts aimed at elucidating the plant's therapeutic potential [6,7]. Over the years, a substantial number of phytochemical constituents have been isolated from *Scutellaria baicalensis* [8]. These compounds, primarily flavonoids, are believed to be responsible for the plant's diverse medicinal effects. This updated review aims to comprehensively summarize the recent advances in our understanding of *Scutellaria baicalensis*, with a particular emphasis on its phytochemical constituents and pharmacological attributes [9]. It aims to shed light on the plant's traditional use in TCM, its active ingredients, pharmacological actions, potential therapeutic applications, and the challenges and opportunities for its future use in both traditional and modern medicine [10].

* Corresponding author.
E-mail address: kuldeep.singh_mph20@gla.ac.in (K. Singh).

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In Vitro Investigation of *Curcuma longa* and *Momordica charantia* extracts as Potential Therapeutic Agents in Gastric Cancer

Sayantan Dutta*, Indu Mittal[1]

*dsayantan1996@gmail.com, Assistant Professor

Rama University, Kanpur

[1]Associate Professor

IIMT University, Meerut

Abstract: This study explores the therapeutic potential of *Curcuma longa* and *Momordica charantia* extracts against human gastric adenocarcinoma (AGS) cells. Utilizing ethanol and methanol extracts, techniques including cell proliferation inhibition, colony formation suppression, and cell cycle arrest were employed. Results showed significant inhibition of cell proliferation and colony formation, with evidence of cell cycle arrest, suggesting apoptotic induction. A synergistic effect between the extracts was also observed. The study's findings shed light on the potential of *Curcuma longa* and *Momordica charantia* extracts as promising agents against gastric cancer. They also highlight the significance of traditional medicinal plants in modern therapeutic interventions, with the need for further in vivo and clinical trials. This investigation opens avenues for the development of innovative anti-cancer formulations based on natural compounds, supporting the integration of traditional knowledge with contemporary scientific research.

Keywords: *Curcuma longa, Momordica charantia, gastric adenocarcinoma, cell proliferation inhibition, colony formation suppression, cell cycle arrest, ethanol extract, methanol extract, apoptotic induction.*

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Corresponding Author- *dsyantan1996@gmail.com

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INTRODUCTION

Gastric cancer, also known as stomach cancer, remains one of the leading causes of cancer-related mortality worldwide. Despite advances in early detection and treatment, the prognosis for gastric cancer patients,

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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

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A RESEARCH ON FORMULATION AND EVALUATION OF HERBAL ETHOSOMAL GEL FOR ANALGESIC ACTIVITY

Satyendra Mishra*[1], Sonia Pandey[1], Divya Dwivedi[1], Himanshu Mishra[1] , Himanshu Shukla[1], Himanshu Pratap[1], Sonali Omer[1]

Faculty of Pharmaceutical Sciences, Rama University Kanpur, Uttar Pradesh, India.

a. Satyendra Mishra (Associate Professor in FPHS)
Rama University Kanpur (Faculty of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

b. Sonia Pandey (Professor in FPHS)
Rama University Kanpur (Faculty of Pharmaceutical Sciences)

c. Divya Dwivedi (Assistant Professor in FPHS)
Rama University Kanpur (Faculty of Pharmaceutical Sciences)

d. Himanshu Mishra
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh , India

e. Himanshu Shukla
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217 , Uttar Pradesh, India

f. Himanshu Pratap
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

g. Sonali Omer
Rama University Kanpur (Faculty Of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

Corresponding Author
Mr. Satyendra Mishra
Rama University Kanpur (Faculty of Pharmaceutical Sciences)
Pin- 209217, Uttar Pradesh, India

Evaluation of Anti-arthritic Activity of Leaves Extracts of *Neolamarckia cadamba*

Amol Raj[1]*, Manish Kumar Shakya[1], Talever Singh[1], Mohit Agrawal[1], Nishant Singh Katiyar[2]

[1]Department of Pharmacology, Rajiv Academy for Pharmacy, NH-2, P.O. Chhatikara, Mathura, (UP), India.

[2]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, (UP), India.

*Corresponding Author E-mail: **amolraj200@gmail.com**

ABSTRACT:

Background: Rheumatoid arthritis is a major auto immune disorder of body and affects the various joints which may lead to physical disability. The leaves of *Neolamarckia cadamba* (family rubiaceae) have long been used traditionally to treat rheumatoid arthritis. Though, it has not been pharmacologically assessed for rheumatoid arthritis. The current study explores its anti-arthritic mechanism and phytochemical analysis of ethanolic and aqueous extract of leaves of *Neolamarckia cadamba.* **Methods:** Anti-arthritic potential was evaluated through Complete Freund's Adjuvant (CFA) induced arthritis rats model at 200 mg/kg/p.o doses of the ethanolic and aqueous extracts of *Neolamarckia cadamba* leaves using Diclofenac sodium as a standard drug. Apart from this we have evaluated parameters like paw edema, body weight, loco motor activity, hematological observations, and radiography etc. **Results:** The results revealed various arthritic protective mechanisms. Similarly plant exhibited dose dependent anti-arthritic effect with maximum activity observed at 200 mg/kg/ b.w/ p.o.. The results of Complete Freund's Adjuvant (CFA) model depicted better protection against paw edema and body weight alterations. Also *Neolamarckia cadamba* leaves extracts remarkably altered locomotion of rats, and positive results were seen in hematological parameters and radiography. Additionally plant exhibited remarkable anti-oxidant activity. Moreover phytochemical analysis revealed polyphenols, anti oxidants and flavanoids. **Conclusion:** By deeply analyzing the obtained results and data our research work supports the traditional use of *Neolamarckia cadamba* leaves as a potential anti arthritic agent that may be proposed for rheumatoid arthritis treatment.

KEYWORDS: Rheumatoid arthritis, Complete freund's adjuvant, *Neolamarckia cadamba*, Diclofenac sodium Flavanoids.

INTRODUCTION:

Rheumatoid arthritis is a self triggered disorder means it occur due to the body own immune system defect Causing inflammation and further followed by pain in body joints it is also named as rheumatism and is seen mostly in adults and people who are over the age of 65 mostly the females suffers more from arthritis as compared to males and also the persons with obesity [1].

The pattern of rheumatoid arthritis usually varies from patient to patient and includes the period of flares and remission if proper treatment measures are not taken after the diagnosis of rheumatoid arthritis it can lead to erosive bone damage which ultimately results in joint destruction and physical disability. There is a higher mortality percentage of patients suffering from rheumatoid arthritis as compared to normal population comprising of cardio vascular and respiratory diseases and also lymphoma and lupus which leads to 50% of all deaths [2]. Rheumatoid arthritis may sometimes also leads to premature death and lowers the standard of life in this industrialized and developing world [3]. The proper reasons of rheumatoid arthritis are unknown but it basically occurs due to the auto immunity d... y responses without the presence of any bacteria, viruses or say the foreign b... cks its own body tissue and joints causing rheumatoid arthritis. It pains mo... g condition. There is no permanent cure of rheumatoid arthritis several ... to stop the progression of rheumatoid arthritis. In spite of using medicines ... easures for self maintenance of rheumatoid arthritis such as daily routine exercises and yoga which can reduce pain [4].

Neolamarckia cadamba (family rubiaceae) generally called Cadamba appreciates a consecrated situation in ayurveda. It is moreover named as kadamb. The tree is a medium to enormo... and a size of around 2-3 meter with tube shaped branche... According to shusruta samhita an ancient Indian ayurvedic lit... useful in phlegm which is a form of mucus in lungs and the ... rheumatism (Rheumatoid arthritis) [6]. Leaves of *Neolamarck...* alkaloids, polyphenols, tannins, flavanoids and anti oxidants [7]. *Neolamarckia cadamba* has also been reported to possess various pharmacological activities like analgesic, anti pyretic, anti inflammatory activity, diuretic and laxative activity. anti oxidant activity, hypolipidemic activity, anti fungal activity, anti malarial activity, anti parasitic activity. antiproliferative activity, wound h... vity, anti microbial activity, anti helmintic activity, anti cancer activity and anti venom activity [8]. But there is none ... cientific evidence/proof for the anti arthritic activity of *Neolamarckia cadamba* leaves. Hence therefore ... anti arthritic protective mechanism of the ethanolic and aqueous extract of *Neolamarckia cadamba*

Article

A Comprehensive Review on Emerging Need for Nutraceuticals

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Abhishek Singh · Seema Yadav · Nimisha · Show all 5 authors · Narahari N Palei

Abstract

Nutraceuticals, or "bioceuticals," are alternatives to drugs or medicines that provide numerous health benefits and nutrients for humans and animals. Pharmaceuticals are used for the treatment of various types of diseases, such as cancer, diabetes, anemia, and heart disease, because of the presence of phenolic, flavonoid, and essential oil components. A comprehensive search was conducted across various online databases and search engines, including Scopus, Science Direct, PubMed, Web of Science, and Google Scholar, using specific keywords such as phytochemical compositions, traditional uses, antibacterial, ant proliferative, hypocholesterolemic, insecticidal, cardiovascular, and neurodegenerative diseases. Nutraceuticals play a crucial role in disease prevention and treatment by harnessing the healing power of plant-based materials. The nutraceutical market is a thriving multi-billion-dollar industry projected for rapid growth in the coming decade due to increased consumer awareness and a focus on improved wellness. These diverse food-derived products, including Tulsi, turmeric, papaya, berries, grapes, amaranth leaves, spirulina, and marine sources, are rich in nutrients that aid in preventing ailments such as cardiovascular diseases, gastrointestinal issues, kidney dysfunction, and liver disorders. Notably, nutraceuticals exhibit minimal side effects, are locally available, and are cost-effective, making them accessible to a wider population. With their higher efficacy, nutraceuticals contain physiologically active components that are naturally in foods or added as functional ingre

... Read more

Ferroptosis Signaling Pathways: Alzheimer's Disease

Authors
Shubhrat Maheshwari

Affiliations
Faculty of Pharmaceutical Sciences, Rama University, Kanpur, India

Key words
ferroptosis, lipoxygenase pathway, glutathione peroxidase, Alzheimer's disease

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Georg Thieme Verlag, Rüdigerstraße 14, 70469 Stuttgart, Germany

Correspondence
Dr. Shubhrat Maheshwari
Rama University, Faculty of Pharmaceutical Sciences,
Mandhana, Bithoor Road
209217 Kanpur, Uttar Pradesh
India
Tel.: 6399311040
shubhrat.maheshwari@gmail.com

ABSTRACT

The involvements of iron metabolism, lipid peroxidation, and oxidative stress in Alzheimer's disease (AD) development have recently received a lot of attention. We also observe that these pathogenic occurrences play a key role in regulating ferroptosis, a unique regulatory cell death that is iron-dependent, oxidative, and non-apoptotic. Iron is a crucial component that makes up a subunit of the oxidase responsible for lipid peroxidation. A family of non-heme iron enzymes known as lipoxygenases (LOXs) can cause ferroptosis by oxidising polyunsaturated fatty acids in cellular membranes (PUFAs). Toxic lipid hydroperoxides are produced in large part by the iron in LOX active sites. Deferoxamine and deferiprone, two iron chelators, could also treat ferroptosis by eliminating the crucial catalytic iron from LOXs. Phospholipids containing polyunsaturated fatty acids are the main substrates of lipid peroxidation in ferroptosis, which is favourably controlled by enzymes like ACSL4, LPCAT3, ALOXs, or POR. Selective stimulation of autophagic degradation pathways leads to an increase in iron accumulation and lipid peroxidation, which promotes ferroptosis. We highlighted recent advancements in our understanding of ferroptosis signaling routes in this study. One form of regulated necrotic cell death known as ferroptosis has been linked to a number of diseases, including cancer, neurological disorders, and ischemia/reperfusion injury. Cerebrospinal fluid (CSF) ferritin may be a good indicator of the amount of iron in the brain because it is the main protein that stores iron.

Introduction

Iron is the most common transition metal in life and the second most common metal in the earth's crust after aluminium [1]. Via its numerous oxidation states, iron participates in a number of essential biological activities, including oxygen transport, DNA synthesis and repair, respiratory function, myelin production, and cellular metabolism. At the systemic and cellular levels, iron homeostasis is maintained by a number of processes, including hepcidin and iron regulatory proteins (IRPs). When iron homeostasis is disturbed, there may be an excessive amount of intracellular iron accumulation. This can lead to oxidative stress and free radical production, which can harm proteins, lipids, and DNA. Due to its ease in giving and accepting electrons to take part in oxidation-reduction events, iron is an essential element for a wide range of fundamental biological processes. Yet when there is too much "free" iron present, it is equally poisonous [2]. In fact, this redox-active iron can accelerate the Fenton reaction, which damages cells by destroying their lipids, proteins, and nucleic acids. The central nervous system's production of myelin and neurotransmitters depends heavily on iron. Yet, high levels of iron in the brain have been linked to numerous neurodegenerative conditions, including multiple sclerosis, Alzheimer's disease (AD), Parkinson's disease (PD), and Huntington's disease (HD). Moreover, neurological impairments and mental retardation can readily result from iron deficiency in babies and the developing brain. As a result, a complex network of mechanisms comprising absorption, use, recycling, and storage must be used to elegantly manage iron metabolism. A number of proteins, including ferritin (FTH1), transferrin (Tf), transferrin receptor 1 (TfR1), divalent metal transporter 1 (DMT1, SLC11A2), ferroportin (FPN1), and hepcidin, are involved in this intricate, tightly controlled process. Oxidative stress results from an imbalance in the body's production of free radicals and antioxidants [3]. Cells that

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A COMPREHENSIVE REVIEW ON MANAGEMENT AND PREVENT OF SARS-COV2

Ajeet Kumar[1*], Lakshmi Mishra[2], Pratiksha Jayaswal[2], Jagat Pal Yadav[3], Shubhrat Maheshwari[4], Alka[5], Neelam Jain[6]

[1]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
[2]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217 (U.P.) India.
[3]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India
[4]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
[5]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India
[6]Faculty of Pharmacy, Oriental University, Indore, M.P, India

Corresponding author
Ajeet Kumar
[1]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
Email: ajeet.707172@gamil.com

Abstract

Coronavirus disease 2019 (COVID-19) has affected almost every country in the world by causing a global pandemic with a high mortality rate. Lack of an effective vaccine and/or antiviral drugs against SARS-CoV-2, the causative agent, has severely hampered the response to this novel coronavirus. Natural products have long been used in traditional medicines to treat various diseases, and purified phytochemicals from medicinal plants provide a valuable scaffold for the discovery of new drug leads. In the present study, we performed a computational screening of an in-house database composed of ~1000 phytochemicals derived from traditional Saudi medicinal plants with recognised antiviral activity.Coronaviruses are enveloped positive-strand RNA viruses belonging to family Coronaviridae and order Nidovirales which cause infections in birds and mammals. Among the human coronaviruses, highly pathogenic ones are Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) and the Middle East Respiratory Syndrome coronavirus (MERS-CoV) which have been implicated in severe respiratory syndrome in humans. There are no approved antiviral drugs or vaccines for the treatment of human CoV infection to date. The recent outbreak of new coronavirus pandemic, coronavirus disease 2019 (COVID-19) has caused a high mortality rate and infections around the world which necessitates the need for the discovery of novel anti-coronaviral drugs.

Key words - SARS-CoV-2, MERS-CoV, RT-PCR, radiology, respiratory tract infection.

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A COMPREHENSIVE STUDY ON EPIDERMODYSPLASIA VERRUCIFORMIS

Kartik Gupta*, Sneha Kushwaha, Priya Tiwari, Kamran Javed Naquvi, Keshari Kishore Jha

Faculty of pharmaceutical sciences, Rama university, Kanpur, Uttar Pradesh, 209217

Email ID: kartik2050don@gmail.com

***Corresponding author** – Mr. Kartik Gupta,

Faculty of pharmaceutical sciences, Rama university, Kanpur, Uttar Pradesh, 209217

Abstract

Epidermodysplasia verruciformis (EV) is a rare genodermatosis that predisposes certain individuals to developing cutaneous malignancies caused by infectious agents. Mutations in the transmem brane channel gene TMC6 or TMC8 create patient susceptibility to infections by human papilloma virus (HPV) and the development of EV-typical plane warts. Mainly in the UV-exposed regions, af fected individuals have a lifelong increased risk for the development of cutaneous malignancy, especially squamous cell carcinoma (SCC). EV is the first disease to correlate cancer and viral infection, therefore EV now serves as the cornerstone to our understanding of viral oncogenesis. The EV mod el of cutaneous SCC may be applied to the general population; it is suggested that the TMC mutations impair the immunity of the patients, supporting the amplification of specific HPV types. Despite sev eral advances in our comprehension of EV, the pathogenesis of the disease is not well understood.

Introduction

A rare skin condition known as epidermodysplasia verruciformis (EV) that develops during childhood or infancy is permanent. It is brought on by a variety of distinct human papillomavirus (HPV) strains, occasionally even those linked to flat warts in the general public. Refractory, disseminated skin lesions that resemble flat warts or manifest as multicolored macules are the hallmark of EV. A significant percentage of people develop cutaneous carcinomas in situ or invasive carcinomas, typically of the Bowen's type, frequently at a young age. In most cases, HPV type 5 DNA sequences are found in EV carcinomas. In addition to certain HPVs, EV is a complex illness involving immune, genetic, and extrinsic factors. Parental consanguinity and the involvement of siblings in certain cases, as well as the majority of patients' reported paired cell-mediated immunity and the typical location of skin malignancies in places exposed to light, have all suggested this.

Lewandowsky and Lutz first identified EV as a congenital epidermal defect in 1922, but over the next forty years, there was debate regarding the nosological entity of EV. According to some writers, EV is an acquired defect of epidermal division (Geno dermatosis), causing the epidermis to vacuolate and making it more prone to skin cancer growth (Maschkilleisson, 1931; Waisman and Montgomery, 1942; Midana, 1949; Lazzaro et al., 1966; Oehlschlaegel et ai., 1966; Relias et al., 1967). Others considered EV as a particular form of generalized

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A COMPREHENSIVE REVIEW OF ARTIFICIAL INTELLIGENCE APPLICATION IN MEDICINAL DEVICES: REVOLUTIONIZING HEALTHCARE.

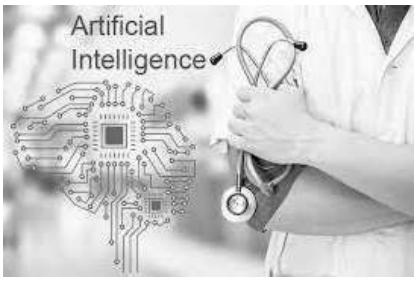
Akhilesh Kumar[1]*, Neha Sirvastava[2], Nishant Singh Katiyar[2], Chandan Kumar Singh[2]

1 CSIR-CIMAP Kukrail, Lucknow, Uttar Pradesh, 226015.
[2]Faculty of Pharmaceutical Sciences Rama University, G.T. Road Mandhana Kanpur.

**Corresponding Author:* Akhilesh Kumar, CSIR-CIMAP Kukrail, Lucknow, Uttar Pradesh, 226015.

Abstract

The integration of Artificial Intelligence (AI) in medicinal devices has emerged as a transformative force in revolutionizing healthcare. This comprehensive review explores the diverse applications of AI in medicinal devices, shedding light on its unprecedented impact on diagnostics, therapeutics, and healthcare management. The review begins by elucidating the significance of AI in the broader healthcare landscape, emphasizing its potential to enhance accuracy, efficiency, and patient outcomes. Methodologically, the review entails a systematic examination of literature, focusing on key databases and criteria for article selection. The exploration of AI applications in medicinal devices encompasses diagnostic and imaging advancements, where AI algorithms augment medical imaging interpretation, pathology analyses, and overall diagnostic precision. Furthermore, the review delves into therapeutic devices, revealing AI's role in personalized medicine, drug delivery optimization, and treatment customization. The discussion extends to monitoring and predictive analytics, demonstrating how AI contributes to real-time patient monitoring, disease prediction, and risk assessment. Navigating through challenges, the review addresses concerns such as data security, ethical considerations, and regulatory frameworks shaping the implementation of AI in medicinal devices. It balances the discourse by highlighting opportunities for future advancements and improvements, underscoring the potential for AI to redefine healthcare practices. Case studies embedded within the review provide tangible examples of successful AI applications in medicinal devices, offering concrete evidence of the technology's efficacy. The evolving regulatory landscape governing AI in medical devices is explored,



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A COMPREHENSIVE LITERATURE REVIEW ON THE THERAPEUTIC POTENTIAL OF MEDICINAL HERBS (ASHWAGANDHA, GILOY) IN THE MANAGEMENT OF PARKINSON'S DISEASE: RECENT DEVELOPMENTS

Akhilesh Kumar[1]*, Neha Sirvastava[2], Nishant Singh Katiyar[2], Chandan Kumar Singh[2]

1 CSIR-CIMAP Kukrail, Lucknow, Uttar Pradesh, 226015.
[2]Faculty of Pharmaceutical Sciences Rama University, G.T. Road Mandhana Kanpur.

*Corresponding Author: Akhilesh Kumar, CSIR-CIMAP Kukrail, Lucknow, Uttar Pradesh, 226015.

Abstract

Parkinson's disease (PD) is a complex neurodegenerative disorder characterized by the progressive loss of dopaminergic neurons, resulting in motor and non-motor impairments. As conventional treatments often exhibit limitations, there is a growing interest in exploring alternative therapeutic options, including medicinal herbs. This literature review aims to provide a comprehensive overview of recent developments in the utilization of two prominent medicinal herbs, Ashwagandha (Withania somnifera) and Giloy (Tinospora cordifolia), in the context of Parkinson's disease.

The review synthesizes findings from a range of preclinical and clinical studies, elucidating the neuroprotective and neuroregenerative properties of Ashwagandha and Giloy. Both herbs have demonstrated anti-inflammatory, antioxidant, and anti-apoptotic effects, suggesting potential benefits in mitigating the underlying mechanisms of neurodegeneration in PD. Furthermore, the review explores the modulation of neurotransmitter systems, particularly dopamine, by these herbs, highlighting their potential to ameliorate motor symptoms associated with Parkinson's disease.

The document critically assesses the methodological rigor of existing research, identifies gaps in current knowledge, and offers insights into the mechanisms underlying the observed therapeutic effects. Additionally, the review discusses the safety profile of Ashwagandha and Giloy, emphasizing the importance of standardized formulations and optimal dosage regimens for effective and safe integration into Parkinson's disease management.

In conclusion, this literature review provides a valuable synthesis of recent developments in the exploration of Ashwagandha and Giloy as potential therapeutic agent[illegible]rkinson's disease. The findings suggest that these medicinal herbs hold prom[illegible]mplementing existing treatment approaches, paving the way for further

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AN OVERVIEW: ROLE OF B-AMYLOID PRECURSOR PROTEIN IN THE PATHOPHYSIOLOGY OF ALZHEIMER'S DISEASE

Ajeet Kumar[1*], Rajat Srivastava[2], Priya Tiwari[2], Lakshmi Mishra[2], Neeraj Jain[3]

[1]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

[2]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217 (U.P.) India.

[3]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

Corresponding author

Ajeet Kumar

[1]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

Email: ajeet.707172@gamil.com

ABSTRACT

This article discussed the diagnosis and treatment of Alzheimer's disease. In recent years, significant advancements have been developed in the diagnosis and treatment of Alzheimer's disease. Recent studies and research developed in the genetic field which is helpful in the treatment and diagnosis of Alzheimer's disease. The newly revised criteria for the diagnosis of Alzheimer's disease are biomarkers for supportive evidence for the pathology. The identification of new susceptibility genes has opened new avenues for exploration of the underlying disease mechanism. In addition to detecting novel risk factors in large samples, next-generation sequencing approaches can deliver novel insights with even small numbers of patients. This common and devastating cerebral degeneration occurs throughout the world and accounts for one-half to two-thirds of all cases of late-life intellectual failure in many developed countries that have achieved high-life expectations. Because the etiology of Alzheimer's disease remains unclear, fasting hyperinsulinemia has been incriminated in several human diseases, we examined the relationship between Alzheimer's disease, fasting plasma insulin, glucose, body mass index and waist.

KEYWORD; Alzheimer's disease, Amyloid precursor protein, Cognitive, Non-Cognitive, Periodic Acid-Schiff.

INTRODUCTION

Alzheimer's disease, first introduced by Alois Alzheimer's in 1907.it is a neurodegenerative disease characterized by impairment of memory and eventually by disturbances in reasoning, planning language, and perception [1]. By 2030, a projected 66 million people worldwide will be living with dementia a figure set to rise to 155 million by 2050 [2]. Most people's memory declines with age, so the line between normal age-related forgetfulness and the earliest signs of Alzheimer's disease can be fine so fine that a category of mild cognitive impairment, or MCI, has been created, in part to avoid diagnosing Alzheimer's disease in people with more benign

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ARTIFICIAL INTELLIGENCE AND NANOTECHNOLOGY FOR EFFICACY IN CANCER MEDICINE- A COMPREHENSIVE REVIEW

Rajesh Nath[1]*, Anushka Verma[2], Parul Nigam[3], Sayantan Dutta[4], Nishant Singh Katiyar[5], Keshari Kishore Jha[5]

Corresponding Author- Dr. Rajesh Nath, Teerthanker Mahaveer college of Pharmacy, Moradabad, UP, 244001

1 Tirthankara Mahaveer college of Pharmacy, Moradabad, UP, 244001

[2] Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

3 ACME Research Solutions, Prakash Bhawan, New delhi, 110001

4 NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

5 Faculty of Pharmaceutical Sciences, Rama University Mandhana, Kanpur, Uttar Pradesh, 209217

Abstract

Pharmaceutical nanotechnology is the instigative, fleetly arising branch of medical wisdom that deals with employing nanoscale accoutrements as medicine delivery and/ or individual tools. As medicine delivery tools, nano- delivery systems can be used to enhance the point-specific, targeted delivery of precise drugs. Artificial intelligence(AI) and nanotechnology are two several fields that are necessary in realizing the thing of perfection drug acclimatizing the stylish treatment for each cancer case. Recent conversion between these two fields is enabling better case data accession and bettered design of nanomaterials for perfection cancer drug. Individual nanomaterials are used to assemble a case-specific complaint profile, which is also abused, through a set of remedial nanotechnologies, to ameliorate the treatment outgrowth. Still, high intratumor and interpatient heterogeneousness make the rational design of individual and remedial platforms, and analysis of their affair, extremely delicate. Integration of AI approaches can bridge this gap, using pattern analysis and bracket algorithms for bettered individual and remedial delicacy. Nanomedicine design also benefits from the operation of AI, by optimizing material parcels according to prognosticated relations with the target medicine, natural fluids, vulnerable system, vasculature, and cell membranes, all affecting remedial efficacy. Then, abecedarian generalities in AI are described and the benefactions and pledge of nanotechnology coupled with AI to the future of perfection cancer drug are reviewed.

Keywords- Artificial intelligence, Nano medicine, AI based Drug modification

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A THERAPEUTIC APPROACH TO THE PREVALENCE, CLINICAL MANIFESTATIONS AND TREATMENT OF DIABETIC NEPHROPATHY

Rajesh Nath1*, Anushka Verma2, Parul Nigam3, Sayantan Dutta4, Nishant Singh Katiyar5, Keshari Kishore Jha5

Corresponding Author- Dr. Rajesh Nath, Teerthanker Mahaveer college of Pharmacy, Moradabad, UP, 244001

1 Tirthankara Mahaveer college of Pharmacy, Moradabad, UP, 244001

2 Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

3 ACME Research Solutions, Prakash Bhawan, New delhi, 110001

4 NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

5 Faculty of Pharmaceutical Sciences, Rama University Mandhana, Kanpur, Uttar Pradesh, 209217

ABSTRACT

Background: The most common cause of diabetic nephropathy isend- stage renal disease (ESRD). The prevalence of DKD remains high despite rigorous treatments such as hyperglycemic management, blood pressure control, and the use of renin-angiotensin system blockades. Recent research reveals that the DKD spectrum has shifted, and that much progress has been made in developing new DKD treatments. As a result, it's past time to conduct a systemic evaluation of recent DKD advances**.**

The aim of this review paper was to investigate the knowledge regarding the diabetic nephropathy. This disease condition involves the management and prevention of diabetes kidney disease.

Result: Selection of data has been done by studying a combination of research and review paper from different data bases like pub med, NCBI, science direct, and web of science from 1991-2017 by using keywords like “Diabetic kidney disease”, “microalbuminuria”, “proteinuria”, “antihypertensive treatment”, “glomerular filtration rate”, “glycemic control”, “End stage renal disease”.

Conclusions: The variety of DKD's clinical presentation and progress has crucial implications for its diagnosis, prognosis, and possibly treatment. Patients with type 2 diabetes with compromised renal function now have a wider range of treatment alternatives, allowing for better management of these patients**.**

Keywords: renal failure, proteinuria, glycaemic control, type 1 diabetes mellitus, antihypertensive treatment, blood pressure control, glomerular filtration rate, diabetic nephropathy

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Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 04, 2022

APPROVAL OF ITOLIZUMAB FOR CORONA: A PREMATURE DECISION OR NEED OF THE HOUR

Anushka Verma[1*], Rajesh Nath[2], Parul Nigam[3], Sayantan Dutta[4], Pratiksha Jayaswal[5], Nishant Singh Katiyar[5], Keshari Kishore Jha[5]

Corresponding Author- Anushka Verma, Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

[1]Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

[2]Tirthankara Mahaveer college of Pharmacy, Moradabad, UP, 244001

[3]ACME Research Solutions, Prakash Bhawan, New delhi, 110001

[4]NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

[5]Faculty of Pharmaceutical Sciences, Rama University Mandhana, Kanpur, Uttar Pradesh, 209217

Abstract:

Itolizumab is a first-in-class anti-CD6 monoclonal antibody that was initially developed for various cancers and was later developed and approved in India for treatment of moderate to severe chronic plaque psoriasis in 2013. This drug is now being re-purposed for CORONA. The potential utility of Itolizumab in CORONA, based on its unique mechanism of action in ameliorating cytokine release syndrome (CRS), was proposed first in Cuba with approval of a single-arm clinical trial and expanded access use. Subsequently, a phase II, open-label, randomized, placebo-controlled trial has been conducted in 30 CORONA patients in India after receiving regulatory permission. Based on the results, the Indian drug regulatory agency approved itolizumab in July 2020 for 'restricted emergency use' for the treatment of CRS in moderate to severe acute respiratory distress syndrome (ARDS) due to CORONA. This has drawn sharp criticism within the scientific community, with the approval being granted on the basis of a relatively small phase II trial, without conduct of a conventional phase III trial, and lacking availability of the claimed supportive real-world evidence in the public domain to date. In a global scenario where finding a successful treatment for CORONA is of utmost priority, a biologic agent has been re-purposed and approved with a successfully completed RCT, in a country where cases and mortality due to CORONA are growing exponentially. However, instead of welcoming the approval with open arms, many doubts are being raised. This is an issue that needs to be considered and dealt with sensitively, as well as scientifically.

Keywords- Itolizumab, plaque psoriasis, biological therapy,

Introduction:

Amidst the ongoing struggle to find a successful treatment for CORONA, itolizumab became the first novel biologic therapy to be approved in the world for CORONA—for patients with moderate [illegible] complications [1]. The Indian drug regulatory agency (Central Drug Standard [illegible] Organisation, CDSCO) recently approved itolizumab for 'restricted emergency [illegible] or treatment of cytokine release syndrome (CRS) in moderate to severe acute

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A REVIEW ON NUTRACEUTICALS WITH ITS RECENT ADVANCEMENT (AN OVERVIEW)

Satyendra Kumar Mishra[1*], Lakshmi Mishra[2], Arpita Choudhary[2], Keshari Kishore Jha[2]

[1]Kailash Institute of Pharmacy and Management, GIDA, Gorakhpur, Uttar Pradesh -273209, India
[2]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur, pin-209217, Uttar Pradesh, India

Corresponding author
Satyendra Kumar Mishra*
Kailash Institute of Pharmacy and Management, GIDA, Gorakhpur, Uttar Pradesh -273209, India Tel: +91-8009081360
E-mail: sm12260@gmail.com

Abstract

In the current scenario people are deeply concerned about their health because of lifestyles have changed drastically due to increase in working hours and various psychological pressures, which have led to an increased incidence of various life-threatening diseases.[1] In addition to this they are frustrated with the expensive, high-tech, disease-treatment and management approach. The demand for nutraceuticals and phytonutrients has increased over the past few years and they are being used by people for various outcomes. Nutraceuticals have also found considerable trust in treating headaches and migraines resulting from stress. Other related nutraceutical products are touted as cures for thinning hair, lack of confidence poor complexion, varicose veins, alcoholism, depression, and lethargy. In this chapter we made an attempt to classify all types of nutraceuticals with examples followed by their application in the treatment of various disorders. Furthermore, the implantation of the designing and development of dosage forms for offering better delivery nutraceuticals carrier of theimportance and challenges have also been enumerated. Products known as nutraceuticals can be used as medication in addition to being nutritional. A substance that has physiological benefits or offers protection against chronic disease may be referred to as a nutraceutical product. Nutraceuticals can be used to boost wellbeing, slow down aging, stop chronic diseases from occurring, lengthen life expectancy, or support the body's structure or functions.[1,2] Due to their potential for having nutritional,safe,and therapeutic impacts, nutraceuticals have recently attracted a lot of attention. These medicines have demonstrated promising outcomes in a variety of problems, according to recent investigations. Much work has gone into the current review to propose novel ideas regarding nutraceuticals based on their

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ACCESSIBLE QUANTITATIVE TECHNIQUES FOR MEASURING FURANTHRIL IN BOTH PURE FORM AND IN PHARMACEUTICAL FORMULATIONS

Ajit Kumar Varma[1*], Rajat Srivastava[2], Neha Sirvastava[2], Gyanendra Singh[2], Nishant Singh Katiyar[2]

[1]School of Pharmacy, Lingaya's Vidyapeeth, Faridabad, Haryana, 121002, India

[2]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur (U.P.) India-209217

***Corresponding author**: Ajit Kumar Varma, School of Pharmacy, Lingaya's Vidyapeeth, Faridabad, Haryana, 121002, India

Abstract

Aims: Design of technical methods for the determination of Furanthril in its pure and pharmaceutical dosage form using spectral methods.

Study design: Planned and executed to estimate Furanthril by using Visible spectrophotometric in pure and pharmaceutical dosage form.

Methodology: Furanthril, the commercially known drug Lazix, which is important in the treatment of heart diseases and high blood pressure. This study was carried out using JASCO V – 630 double-beam computerized UV-Visible spectrophotometer with 1 cm matched cell, and HANA pH meter was used for reported pH readings.

Results: The reaction between Furanthril and bromo-phenol blue, xylenol orange, and chromazorol S. The decreasing in the intensity of the resulted colored complex was measured using bromo-phenol blue, xylenol orange, While the increasing of the color intensity was measured in the third method. These three method were based on charge transfer reaction. The limits of Beer's law for the first 0.4-32µg. mL-1, second method 1-32 and the third method were 0.8-32 depending on the level of concentration, while the values of the molar absorption coefficient 1.4×104, 2.1×104 and 1.57×104 l.mol-1.cm-1 for the first, second and third method respectively. Sandel's significance also was calculated for these three methods, 0.0157 µg.cm-2 for the first method, 0.0236 µg.cm-2 for the second method, while the third method was 0.0210 µg.cm-2. The method has been successfully applied for the determination of Furanthril in its pure form and in some of its pharmaceutical preparations

Conclusion: The proposed method was validated in terms of linearity, range, Accuracy, precision, Specificity, Robustness. Method was successfully applied to the estimation of Furanthril,in its pure pharmaceutical dosage form.

Keywords: Furanthril, Xylenol Orange, Bromo-Phenol Blue, Chromazorol S, Pharmaceutical Preparations

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NIGERIAN HERBAL MEDICINE PRODUCTS SOLD: A PILOT SURVEY

Ajit Kumar Varma[1*], Priya Tiwari[2], Neha Sirvastava[2], Gyanendra Singh[2], Nishant Singh Katiyar[2]

[1]School of Pharmacy, Lingaya's Vidyapeeth, Faridabad, Haryana, 121002, India

[2]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur (U.P.) India-209217

*Corresponding author: **Ajit Kumar Varma, School of Pharmacy, Lingaya's Vidyapeeth, Faridabad, Haryana, 121002, India**

Abstract –

Background: It is thought that the usage of herbal medicine is growing. The usage of unrefined medications is gradually being replaced with carefully prepared, developed, and recognised herbal medicinal products. The rising quantity of herbal medicine goods on store shelves in Nigeria is proof of this trend.

Goals: In the Federal Capital Territory, Abuja, the survey's objectives were to inspect and record herbal medicine goods offered in pharmacies, retail stores, and mainly closed and open marketplaces.

Methodology: An open-ended, semi-structured questionnaire was used as part of a cross-sectional study, and both descriptive and inferential statistics were performed. **Results and Discussion:** 95.7 percent of the medications stocked in open markets were crude. Just 26.1% of the vendors in the outdoor markets sold herbal medicine. In the FCT, oral administration accounts for more than 70% of the use of herbal medicines. Nigeria produces 68% of the world's herbal medicine products, with the most common indications being bitters and detoxification (26.4%), aphrodisiacs and fertility (16.7%), diabetes, and cardiovascular disease (10%). The percentage of products with a NAFDAC registration or listing was just 39.3%. There is a significant knowledge gap about the branding, packaging, and registration of herbal medications in open marketplaces.

Conclusion: In order to increase acceptability, national relevance, and international recognition, TMPs must be educated on the fundamentals of medication creation and packaging. Producers of herbal medicines need to be made more aware of the registration procedures and motivated to register their goods.

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Research paper **UGC CARE Listed (Group -I) Journal Volume 11, Iss 06, 2022**

REVIEW ON EFFICACY OF COSMETICS AND COSMECEUTICALS

Divya Dwivedi[1*], Lakshmi Mishra[2], Kamran Javed Naqvi[2], Arpita Choudhary[2], Shubham Sharma[3], Neeraj Jain[4], Neelam Jain[5]

[1]Sakshi College of Pharmacy, Kanpur, Uttar Pradesh

[2]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur, Uttar Pradesh

[3] Signa College of Pharmacy- Kanpur- UP

[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

[5]Faculty of Pharmacy, Oriental University, Indore, M.P.

*Corresponding Author: Divya Dwivedi

Sakshi College of Pharmacy, Kanpur,

Uttar Pradesh, India- 209217.

*Email: divyadwivedi803@gmail.com

Mob no: +91-7007028600

Abstract-

In the cosmetics and skincare industries, the effectiveness of cosmetics and cosmeceuticals is a topic of enormous interest and significance. With a special emphasis on Lipstick, this article tries to investigate the effectiveness of cosmetic items.

Various regulatory agencies from various nations oversee the safety and effectiveness of cosmetics and cosmeceuticals in accordance with predetermined standards. The capacity of cosmetics to produce desired outcomes, such as enhancing look, improving texture, and offering skincare advantages, is referred to as effectiveness.

In the cosmetics sector, lipstick maintains a unique position due to its widespread usage. It has extra advantages in addition to colouring the lips. Lipstick effectiveness may be evaluated in a number of ways, such as colour payoff, durability, moisturization, and protection.

A crucial component of lipstick effectiveness is colour payoff. Lipsticks are available in a variety of vivid, saturated hues that may compliment various skin tones and improve the overall look of the face. The effectiveness of a lipstick in improving attractiveness is shown by its capacity to offer accurate, rich hues that remain true throughout the day.

Another important consideration in determining lipstick effectiveness is longevity. Long-lasting colour from a high-quality lipstick should lessen the need for frequent reapplication. This guarantees that the chosen lip colour will stay intact and vivid for a long time, providing comfort and confidence to the user.

One of the main advantages that many lipsticks provide is moisturization. Lipstick formulas often include hydrating ingredients like oils and butters to help keep the lips moistened and avoid chapping and dryness. The capacity of these moisturizing qualities to preserve lip moisture levels, enhance lip texture, and encourage smooth and supple lips may be used to gauge th[illegible]tiveness.

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REVIEW ON EFFICACY OF COSMETICS AND COSMECEUTICALS

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[1]Sakshi College of Pharmacy, Kanpur, Uttar Pradesh

[2]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur, Uttar Pradesh

[3] Signa College of Pharmacy- Kanpur- UP

[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

[5]Faculty of Pharmacy, Oriental University, Indore, M.P.

*Corresponding Author: Divya Dwivedi

Sakshi College of Pharmacy, Kanpur,

Uttar Pradesh, India- 209217.

*Email: divyadwivedi803@gmail.com

Mob no: +91-7007028600

Abstract-

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OVERVIEW ON EFFECTS OF VARIOUS ANTI-DIABETIC DRUGS – A COMPARISON

Richa Shakya[1*], Pratiksha Jayaswal[2], Aditi Chaudhary[2], Sneha Kushwaha[2], Ravi Kumar[3], Neeraj Jain[4], Neelam Jain[5]

[1]Noida Institute of Engineering and Technology (Pharmacy Institute), Plot no.19, Knowledge Park - 2, Greater Noida, U.P. Pin Code- 201306

[2]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur, Uttar Pradesh

[3]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

[5]Faculty of Pharmacy, Oriental University, Indore, M.P.

Corresponding Author: Richa Shakya, Noida Institute of Engineering and Technology (Pharmacy Institute), Plot no.19, Knowledge Park -2, Greater Noida, U.P. Pin Code- 201306

***Email Id-**richa.shakya@yahoo.com

Abstract

Numerous scientific studies all over the world are being carried out to develop secure and reliable ways of treating Diabetes Mellitus, a common endocrine disorder that causes many other microvascular and macrovascular problems. Being a common and chronic health problem with various adversities, different medical procedures are utilized in this treatment to ensure better no side-effect recovery. In the present study, a balanced comparison is composed on the basis of significant existing researches and approaches done in the field of medicines for hypoglycemic effects via natural and synthetic drugs. Sole purpose of this review article is to assess efficacy of natural and synthetic drugs for diabetes treatment and sort their advantages and shortfalls. A comparative approach is utilized with an aim to provide optimal diabetes treatment model that brings fast recovery with no long term drug dependency or no possibilities of adverse associated damages as hypoglycemia as observed in certain diabetes cure processes.

Materials and Methods: The paper on hypoglycemic effects of natural and synthetic anti-diabetic drugs is entirely composed based on the existing authentic medical analyses and articles that as published. Genuine facts and information are gathered from trusted web libraries.

Results: In this review on natural remedies to avert hypoglycemic effects of synthetic anti-diabetic drugs, we have collected scientifically proven facts that solidify this factor. Additionally, natural products provide added nourishment through their bioactive components vital for stimulating human physical system, metabolic disorder like, diabetes mellitus.

Keywords: Diabetes Mellitus, anti-diabetic drugs, macrovascular disorder.

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NANOMEDICINE AND AI: A PROMISING ALLIANCE FOR PERSONALIZED CANCER TREATMENT

Sayantan Dutta[1*], Parul Nigam[2], Rajesh Nath[3], Anushka Verma[4], Arpita Choudhary[5], Nishant Singh Katiyar[5], Keshari Kishore Jha[5]

[1]NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

[2] ACME Research Solutions, Prakash Bhawan, New delhi, 110001

[3]Tirthankara Mahaveer college of Pharmacy, Moradabad, UP, 244001

[4]Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

[5]Faculty of Pharmaceutical Sciences, Rama University Mandhana, Kanpur, Uttar Pradesh, 209217

***Corresponding Author-** Sayantan Dutta, NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

Abstract

Pharmaceutical nanotechnology is the pioneering, recently emerging field of medical knowledge that deals with using nanoscale accessories as medicinal delivery systems and/or standalone equipment. Nano-delivery devices can be utilized to improve the focused, point-specific administration of precise medications. Nanotechnology and artificial intelligence (AI) are two different disciplines that are essential for implementing the idea of perfection medication adapting the fashionable therapy for each cancer instance. Recent crossover between these two domains is allowing for greater case data access and improved nanomaterial creation for the ideal cancer medication. A case-specific complaint profile is put together using individual nanoparticles, and this profile is then utilized by a number of remedial nanotechnologies to improve the treatment's results. Though the logical design of individual and remedial platforms, as well as study of their relationship, are exceedingly difficult because to substantial intratumor and interpatient heterogeneity. Utilizing pattern analysis and bracket algorithms for improved individual and remedial delicacy, the integration of AI techniques can close this gap. By optimizing material packets in regard to predicted relationships with the target medication, natural fluids, vulnerable system, vasculature, and cell membranes, all of which impact therapeutic efficacy, nanomedicine design also benefits from the operation of AI. The benefits and promise of nanotechnology combined with AI to the future of the perfect cancer medication are then examined, followed by a description of abecedarian generalizations in AI.

Keywords- Artificial intelligence, Nano medicine, AI based Drug modification

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CLINICAL APPLICATIONS OF NANOROBOTS IN CANCER DIAGNOSIS AND THERAPY: CURRENT PROGRESS AND FUTURE PROSPECTS

Anushka Verma[1*], Rajesh Nath[2], Parul Nigam[3], Sayantan Dutta[4], Pratiksha Jayaswal[5], Keshari Kishore Jha[5]

Corresponding Author- Anushka Verma, Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

[1]Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

[2]Tirthankara Mahaveer college of Pharmacy, Moradabad, UP, 244001

[3]ACME Research Solutions, Prakash Bhawan, New delhi, 110001

[4]NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

[5]Faculty of Pharmaceutical Sciences, Rama University Mandhana, Kanpur, Uttar Pradesh, 209217

ABSTRACT

Cancer is a major health issue worldwide, and the need for advanced diagnostic and therapeutic techniques is critical to improve patient outcomes. Nanorobots offer a promising technology for cancer diagnosis and therapy, as they can be programmed to target cancer cells specifically and deliver drugs or other agents directly to the tumor site. This paper provides an overview of the current status and future prospects of nanorobots in cancer diagnosis and therapy. We first discuss the various types of nanorobots that have been developed, including DNA, protein-based, and hybrid nanorobots. We describe how these nanorobots can be designed to recognize and target cancer cells based on their molecular signatures. We then review the current applications of nanorobots in cancer diagnosis, including their use in detecting cancer biomarkers and imaging cancer cells. We also highlight how nanorobots can be utilized to enhance the accuracy of cancer diagnosis by providing real-time feedback during diagnostic procedures. Finally, we discuss the current applications of nanorobots in cancer therapy, such as drug delivery and photothermal therapy. We explain how nanorobots can be engineered to release drugs or other agents specifically at the tumor site, minimizing side effects and toxicity. We also demonstrate how nanorobots can be used to deliver photothermal agents to cancer cells, allowing for the selective destruction of tumor tissue. In summary, nanorobots have the potential to revolutionize cancer diagnosis and therapy. Although challenges remain, such as improving the safety and efficiency of these technologies, the prospects of nanorobots in the fight against cancer are considerable.

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NANO HERBAL FORMULATION: A NEW APPROACH OF MEDICINAL PLANTS AND THEIR THERAPEUTIC MODALITIES

Jagat Pal Yadav*[1], Shubhrat Maheshwari[2], Ajeet Kumar[3], Alka[4], Ravi Kumar[5], Abhishek Mishra[6], Shailendra Singh Bhadauriya[6], Somesh Shukla[6], Neelam Jain[7]

[1]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

[2]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.

[3]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India

[5]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[6]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

[7]Faculty of Pharmacy, Oriental University, Indore, M.P, India

Corresponding Author

Jagat Pal Yadav*

Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

Email: j.p.yaduvansi@gmail.com

Corresponding Author

Jagat Pal Yadav*

Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

Email: j.p.yaduvansi@gmail.com

Abstract

Modern medicine has made a significant contribution to humanity's ability to combat a wide range of infectious illnesses. People have shifted their focus back to natural remedies since traditional medication has a reputation for having a plethora of side effects, many of which are mild to nonexistent. The use of herbal remedies to treat infectious illnesses has been around since the beginning of time and has been shown to be a viable option. However, their limited bioavailability and solubility limit their practical use. More effective options have been found in the form of plant-based nanoparticles, which have been shown to boost bioavailability and solubility of herbal medications. For this review, nanotechnology systems will be highlighted as a new drug delivery method for herbal medicines to increase the therapeutic benefits and bioavailability of naturally occurring medications. Also discussed are how to make herbal

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G PROTEIN-COUPLED RECEPTORS (GPCRS): SIGNALING DIVERSITY AND THERAPEUTIC IMPLICATIONS

Jagat Pal Yadav*[1], Shubhrat Maheshwari[2], Ajeet Kumar[3], Alka[4], Ravi Kumar[5], Abhishek Mishra[6], Shailendra Singh Bhadauriya[6], Somesh Shukla[6], Neeraj Jain[7]

[1]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

[2]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.

[3]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India

[5]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[6]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

[7]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P, India

Corresponding Author

Jagat Pal Yadav*

Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

Email: j.p.yaduvansi@gmail.com

Abstract:

G Protein-Coupled Receptors (GPCRs) constitute a large and diverse family of cell surface receptors that play a crucial role in transducing extracellular signals into intracellular responses. This manuscript aims to provide a comprehensive overview of GPCRs, exploring their structure, signaling pathways, physiological functions, and their significance as therapeutic targets. Understanding the intricate mechanisms underlying GPCR signaling is essential for the development of novel pharmacological interventions in various diseases.

Keywords: GPCRs, Signaling, protein kinase, arrestins.

1. Introduction

G Protein-Coupled Receptors (GPCRs) represent a fascinating and immensely diverse family of cell surface receptors that play a fundamental role in transducing extracellular signals into intracellular responses [1]. This group of receptors, also known as seven-transmembrane receptors, holds paramount importance in cellular communication and serves as a critical interface between the external environment and the intracellular machinery [2]. With their ability to sense an array of signaling molecules, ranging from neurotransmitters and hormones to photons, GPCRs regulate an extensive spectrum of physiological processes, making them central

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PHYTOSOMES IN DRUG DELIVERY SYSTEM

Shubhrat Maheshwari[1*], Jagat Pal Yadav[2], Ajeet Kumar[3], Alka[4], Ravi Kumar[5], Abhishek Mishra[6], Shailendra Singh Bhadauriya[6], Somesh Shukla[6], Neelam Jain[7]

[1]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India

[2]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

[3]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India

[5]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[6]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

[7]Faculty of Pharmacy, Oriental University, Indore, M.P, India

***Corresponding Author- Shubhrat Maheshwari, Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Bithoor Road, Kanpur, Uttar Pradesh-209217(India)**

Email Id: shubhrat1996@gmail.com

ABSTRACT

The science of medication delivery has recently paid a lot of attention to phytosomes, which are a specialized delivery method. Unique structures with improved bioavailability and therapeutic efficiency are produced when active chemicals obtained from plants are complexed with phospholipids. This presentation offers a synopsis of phytosomes' potential as drug delivery vehicles. Improved solubility, stability, and absorption of poorly soluble phytoconstituents are only a few of the many benefits of using phytosomes in medication administration. Phytosomes are absorbed more easily into the body and their active chemicals are more readily absorbed

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PROBABLE TREATMENT OPTIONS FOR COVID-19: A BRIEF REVIEW

Sayantan Dutta[1*], Parul Nigam[2], Rajesh Nath[3], Anushka Verma[4], Arpita Choudhary[5], Nishant Singh Katiyar[5], Keshari Kishore Jha[5]

[1]NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

[2] ACME Research Solutions, Prakash Bhawan, New delhi, 110001

[3]Tirthankara Mahaveer college of Pharmacy, Moradabad, UP, 244001

[4]Pranveer Singh institute of Technology Kanpur, Uttar Pradesh, 209217

[5]Faculty of Pharmaceutical Sciences, Rama University Mandhana, Kanpur, Uttar Pradesh, 209217

***Corresponding Author-** Sayantan Dutta, NSHM KNOWLEDGE CAMPUS- Kolkata, 124 B. L. Saha Road, Kolkata, West Bengal 700053

ABSTRACT

Over the last few decades, we have observed several global outbreaks of severe respiratory infections. The current outbreak is novel severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). It is a rapidly spreading disease affecting millions of people worldwide as well as birds and animals. It predominantly caused respiratory tract and gastrointestinal tract symptoms and other mild to very severe clinical signs. The countries most affected countries among all by the disease are the United States of America (USA), India, Brazil, Russia and France with recording the highest infection, morbidity, and mortality rates. Since early January 2021, many articles have been published on COVID-19. Most of these articles were consistent with the reports on the mode of transmission, spread, duration, and severity of the sickness. This worldwide pandemic has put a challenge to identify the therapeutics for its prevention and treatment. Currently, there's no specific treatment against the SARS-CoV-2 infection. Based on the different clinical phases and pathological features various drugs are used for its treatment. The volume and the pace of the clinical trials launched to evaluate the safety and efficacy of numerous agents reflect the need for high-quality evidence for various therapies to be practiced by clinicians. Thus, this review comprehensively discusses the most critical aspects and overall treatments used for COVID 19, including ayurvedic treatments and vaccines.

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A MINI REVIEW OF ETHNOMEDICINAL HERBS WITH STRONG ANTI-INFLAMMATORY AND ANTI-ARTHRITIC EFFECTS

Divya Dwivedi[1*], Lakshmi Mishra[2], Kamran Javed Naquvi[2], Arpita Choudhary[2], Shubham Sharma[3], Neeraj Jain[4], Neelam Jain[5]

[1]Sakshi College of Pharmacy, Kanpur, Uttar Pradesh

[2]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur, Uttar Pradesh

[3] Signa College of Pharmacy- Kanpur- UP

[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

[5]Faculty of Pharmacy, Oriental University, Indore, M.P.

*Corresponding Author: Divya Dwivedi
Sakshi College of Pharmacy, Kanpur,
Uttar Pradesh, India- 209217.
*Email: divyadwivedi803@gmail.com
Mob no: +91-7007028600

Abstract- Throughout history, medicinal plants have played a crucial part in providing medicine. The therapeutic benefits of these plants have been extensively recorded in traditional medical systems, such as Indian, Chinese, and Korean medicine, and are used to treat chronic inflammatory diseases. Millions of people worldwide suffer from the discomfort of arthritis, one of the dangerous chronic inflammatory diseases. Arthritis is an inflammatory disease that can spread quickly, damaging cartilage or bone in the joints as a result of several inflammatory mediators. NSAIDs, DMARDs, and corticosteroids are currently the most often recommended medications for the treatment of inflammation or arthritic pain. Long-term usage of them could have a wide range of harmful effects. Therefore, it is imperative to discover alternative treatment agents with the least amount of hazardous side effects. The people of the Eastern Himalayan region have long utilised a wide variety of medicinal herbs that have strong anti-inflammatory and/or anti-arthritic effects. There haven't been many studies conducted on Himalayan medicinal plants to confirm their therapeutic benefits. Thus, novel and more affordable medications for treating various types of inflammation may be found through research on plant materials and traditional medicine expertise. This review focuses on the Eastern Himalayan medicinal herbs that have demonstrated promise therapeutic effectiveness against inflammatory illnesses, along with innovative methods for preparing these plants.

Key words: Medicinal plants, Traditional medicine, Eastern Himalayan region, Inflammatory mediators, Anti-inflammatory, Anti-arthritic.

Introduction-The immune system's intricate biological response, inflammation can be brought on by a number of things, including harmed cells, pathogens (viral, bacterial, or fungal infections), and dangerous chemicals.1] Swelling, redness, heat, pain, and loss of tissue function are all signs of inflammation. These symptoms are brought on by the local immune response, vascular dilatation, leukocyte reinforcement, and the release of inflammatory mediators, which are all factors that contribute to the development, persistence, and ultimate resolution of the acute state of inflammation.[2,3] Acute inflammation is a

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FORMULATION AND EVALUATION OF FLOATING MICROSPHERES FOR GASTRORETENTIVE DELIVERY OF ANTIDIABETIC DRUG

Neelam Jain*, Neeraj Jain[1], Ajeet Gangwar[2], Aditi Chaudhary[3], Ravi Kumar[4]

[*]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.

[1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[2]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly-243503, U.P., India.
[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.
[4]Narayan Institute of Pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram-821305, Bihar, India.

***Corresponding author name:** Neelam Jain
Address: Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
Email id: neelamnj02@gmail.com
Contact no: +91 8982753610

ABSTRACT

The present study has been performed to microencapsulate alogliptin, an antidiabetic drug (dipeptidyl peptidase-4; DPP-4 inhibitor) for enhancing gastric residence time of drug thereby increasing its bioavailability. The attempt of this study was to formulate the alogliptin loaded floating microspheres by emulsion solvent evaporation technique by varying the ratio of polymers i.e. cellulose acetate butyrate (CAB) and polyethylene oxide (PEO), drug loading and concentration of poly(vinyl alcohol) (PVA) solution. The prepared formulations were studied for entrapment efficiency, particle size, floating behaviour, surface morphology by SEM and *in-vitro* drug release. FTIR spectroscopy was done to confirm the chemical stability of drug after penetration of microspheres. Microspheres formed were spherical with smooth surfaces as revealed by SEM. Formulation F3 composed of CAB: PEO (80: 20 wt%) containing 1.5 wt% PVA solution and drug loading (10 wt%) gave the most advantageous entrapment (87.02±1.06%) and release results after 12 hrs (Q12h=78.19±0.90%) in simulated gastric fluid pH 1.2 as compared to other compositions. The microspheres tend to float over the simulated gastric media for more than 10 h. The % buoyancy of microspheres was found to be up to 89.50±1.53% and showed gastroretentive delivery of the drug. Floating microspheres of alogliptin with good floating ability and gastroretentive release were developed.

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NOVEL INTERPENETRATING POLYMER NETWORK MICROSPHERES FOR CONTROLLED RELEASE OF ANTIVIRAL DRUG

Neelam Jain*, Neeraj Jain[1], Divya Dwivedi[2], Arpita Choudhary[3]

[*]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.

[1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[2]Sakshi College of Pharmacy, Kanpur- 208017, U.P., India.

[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neelam Jain
Address: Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India
Email id: neelamnj02@gmail.com
Contact no: +91 8982753610

ABSTRACT

Objective: Ganciclovir (GCV), a 2'-deoxyguanosine analog, is the most widely used antiviral drug against human cytomegalovirus (HCMV) infections. It has an extremely short half life (2-4 h) and low bioavailability (5-7%) due to first-pass metabolism which favors the development of IPN based drug delivery system.

Methods: Novel interpenetrating polymer network (IPN) of xanthan gum (XG) and poly vinyl alcohol (PVA) was prepared by emulsion cross-linking method to deliver model anti-viral drug, ganciclovir, cross-linked with glutaraldehyde (GA) to form microspheres. Various formulations were prepared by changing the ratio of XG: PVA, extent of cross-linking in order to optimize the formulation variables on drug encapsulation efficiency and release rate. FTIR spectroscopy was done to confirm the formation of IPN matrix and the chemical stability of ganciclovir after penetration of microspheres.

Results: Microspheres formed were spherical with smooth surfaces as revealed by SEM. IPN formulation F9 composed of XG: PVA (1:4) and glutaraldehyde (5.5 ml) gave the most advantageous entrapment (83.66±2.57%) and release results after 8 hrs (Q8h=54.00±0.61%) in 0.1N HCl, pH 1.2 as compared to other compositions. These results suggest that the IPN microspheres are promising carriers for the controlled delivery of ganciclovir.

Keywords: Ganciclovir, Interpenetrating Polymer Network (IPN), Xanthan gum, Poly vinyl alcohol, Microspheres.

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IN-SITU GEL FORMING OPHTHALMIC FORMULATIONS OF PARASYMPATHOMIMETIC DRUG

Neelam Jain*, Neeraj Jain[1], Satyendra Mishra[2], Alka[3], Rani Kumari[4]

*Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[2]Kailash Institute of Pharmacy and Management, Gida, Gorakhpur-273209, U.P., India.
[3]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India.
[4]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neelam Jain
***Corresponding author address:** Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.

Email id: neelamnj02@gmail.com
Contact no: +91-8982753610

ABSTRACT

In situ gels are systems which are applied as solutions or suspensions and are capable of undergoing rapid sol-to-gel transformation triggered by external stimulus such as temperature, pH etc. on instillation. The aim of the present investigation is to prepare and evaluate *in situ* gel-forming ophthalmic drug delivery system of parasympathomimetic drug carbachol, commonly known as carbamylcholine. Locust bean gum, an ophthalmic gel forming mucoadhesive polymer was chosen as polymer which undergoes instantaneous gel formation. Carbopol 934 was further incorporated as a viscosity enhancer in order to achieve the desired consistency so as to facilitate sustained drug release. The developed formulations were evaluated for clarity, pH measurement, gelling capacity, spreadability and *in-vitro* drug permeation study. Thus, *in-situ* gel based systems containing gums can be a valuable approach for ophthalmic drug delivery when compared to conventional systems.

KEYWORDS: Ocular delivery, *In-situ* gel, Gelling capacity, Locust bean gum, Carbachol.

INTRODUCTION

One of the most intriguing difficulties facing pharmaceutical scientists is medication delivery to the eye. The eye is protected by a number of intricate defence systems, making it challenging to establish an effective concentration of the medication inside the target area of the eye. This makes the successful delivery of pharmaceuticals into the eye exceedingly difficult. To get through the eye's defences without enduring long-term tissue damage is the formulator's problem. There is still acceptance for conventional ophthalmic dose forms such solutions, suspensions, ointments, etc. Due to inadequate bioavailability, decreased tear

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IN-VITRO CHARACTERIZATION OF NIOSOMAL FORMULATIONS FOR CONTROLLED DELIVERY OF ANTIRETEROVIRAL DRUG

Neelam Jain*, Neeraj Jain[1], Shubhrat Maheshwari[2], Akhilesh Kumar[3], Pratiksha Jayaswal[4]

*Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[2]Rajarshi Rananjay Sinh College of Pharmacy, Amethi-227405, U.P., India.
[3]CSIR-CIMAP, Kukrail, Lucknow-226015, U.P., India.
[4]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neelam Jain

***Corresponding author address:** Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India

Email id: neelamnj02@gmail.com

Contact no: 8982753610

ABSTRACT

Objective: The present study was aimed to prepare and evaluate niosomal formulations for controlled delivery of an antiretroviral drug; tenofovir disoproxil fumarate (TDF).

Methods: Niosomes were prepared by using various non-ionic surfactants (span-20, span-60 and span-80) and cholesterol in different ratios by ether injection technique to achieve increased permeation of drug at the particular site of action which significantly reduces dosage frequency hence increase patient compliance. The prepared vesicles were evaluated for entrapment efficiency, vesicle size, zeta potential, surface morphology by transmission electron microscopy (TEM) and *in-vitro* release.

Results: TEM results confirmed that, the niosomes formed were white and spherical in shape and have a definite internal aqueous space with uniform particle size. A formulation F5 composed of span 60 and cholesterol (2:1) gave the most advantageous entrapment (92.46±1.62%) and slower release results after 8 hrs (Q8h=55.35±1.93%) as compared to other compositions.

Conclusion: Thus, the niosomes may be considered as a promising carrier for the controlled delivery of tenofovir disoproxil fumarate (TDF).

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INVITRO EVALUATION OF NOVEL INTERPENETRATING POLYMER NETWORK MICROSPHERES FOR THE CONTROLLED RELEASE OF HYPOLIPIDEMIC DRUG

Neelam Jain*, Neeraj Jain[1], Jagat Pal Yadav[2], Ajeet Gangwar[3], Aditi Chaudhary[4]

[*]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.

[1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

[2]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur-228118, U.P., India

[3]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly-243503, U.P., India.

[4]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neelam Jain

***Corresponding author address:** Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.

Email id: neelamnj02@gmail.com

Contact no: +91-8982753610

ABSTRACT

Novel interpenetrating polymer network (IPN) of *Lepidium sativum* (Ls) and poly vinyl alcohol (PVA) were prepared and cross-linked with glutaraldehyde (GA) to form microspheres by emulsion cross-linking method to deliver model drug, simvastatin. In the present study, the seeds of *Lepidium sativum* were selected for the isolation of mucilage. The work also emphasizes to study the physicochemical characteristics of mucilage from *Lepidium sativum* seeds. Various formulations were prepared by changing the ratio of Ls:PVA, extent of cross-linking in order to optimize the formulation variables on drug encapsulation efficiency and release rate. Fourier transform infrared (FTIR) spectroscopy was done to confirm the formation of interpenetrating network and the chemical stability of simvastatin after penetration of microspheres. Microspheres formed were spherical with smooth surfaces as revealed by scanning electron microscopy (SEM), and mean particle size as measured by optical microscopy ranged between 20.14±1.11 to 39.73±0.53 µm. Drug encapsulation of up to 86.65% was achieved as measured by UV method. Both equilibrium swelling studies and *in-vitro* release studies were performed in pH 7.4 media. Release data indicated that a drug release which depends on the extent of cross-linking and the ratio of Ls:PVA present in the microsphere. Based on the results of *in-vitro* studies it was concluded that these IPN microspheres provided oral controlled release of simvastatin.

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CURRENT TREND IN OPHTHALMIC DRUG DELIVERY: ANTIGLAUCOMATIC NIOSOMAL GEL

Neelam Jain*, Neeraj Jain[1], Shubhrat Maheshwari[2], Ravi Kumar[3], Richa Shakya[4], Pratiksha Jayaswal[5]

*Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[2]Rajarshi Rananjay Sinh College of Pharmacy, Amethi-227405, U.P., India.
[3]Narayan Institute of Pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram-821305, Bihar, India.

[4]Noida Institute of Engineering and Technology, Knowledge Park -2, Greater Noida-201306, U.P., India.

[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neelam Jain
***Corresponding author address:** Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.
Email id: neelamnj02@gmail.com
Contact no: +91-8982753610

ABSTRACT

Glaucoma is a prevalent neurodegenerative disorder characterized by increased intraocular pressure (IOP) and subsequent retinal ganglion cell (RGC) death leading to the loss of visual field. The chronic open angle glaucoma creates a major problem of public health and it is second to cataract as a leading cause of global blindness. Its treatment requires a long and prolonged therapy by eye medication. The major drawbacks associated with eye drops are lack of drug permeability through ocular barrier and poor bioavailability. The reason may be attributed to precorneal loss caused by tear turnover, nasolacrimal drainage, reflex blinking, and ocular static and dynamic barriers. With the recent advancement in the field of ocular therapy, drug delivery approaches have been elevated to a new concept in terms of nonionic surfactant vesicles (Niosomes). Nowadays, niosomes are gaining more popularity because of their stability, ease of preparation, achieving reduced toxicity, increasing drug efficacy and most importantly their site targeted action. Moreover, niosomes based ocular gel containing bioadhesive polymer helps the drug to remain adhered to eye surface for a long period of time. Hence, precorneal residence time is increased, resulting in significant enhancement of ocular bioavailability. This article covers

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MICROSPONGES: AN INNOVATIVE STRATEGY FOR DRUG DELIVERY SYSTEM

Neelam Jain*, Neeraj Jain[1], Shubham Sharma[2], Alka[4], Lakshmi Mishra[5]

[*]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.

[1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[2]Signa College of Pharmacy, Kanpur-209304, U.P., India.
[3]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India.
[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neelam Jain
***Corresponding author address:** Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
Email id: neelamnj02@gmail.com
Contact no: +91-8982753610

ABSTRACT:
Conventional topical formulations are intended to work on the surface of the skin. Normally, upon application such formulations release their active ingredients and producing a highly concentrated layer of active ingredient that is quickly absorbed. Therefore, need exists for a system to increase the amount of time that an active ingredient is present either on skin surface as well as within the epidermis, at the same time, minimizing its transdermal penetration in the body. Recently, microsponge delivery system (MDS) has been successively addressed for the controlled release of drugs onto the epidermis with assurance that the drug remains chiefly localized and does not enter the systemic circulation in major amounts. MDS is a unique technology for the controlled release of topical agents, also use for oral as well as biopharmaceuticals (peptides, proteins and DNA-based therapeutics) drug delivery. It consists of microporous beads having a range of 10-25 microns in diameter that possess a versatility to entrap wide range of active agents. This review article covers methods of preparation, release mechanism, characterization and applications of microsponge delivery system with patent information and marketed formulations.
Keywords: Microsponge, Controlled release, Topical delivery, Biopharmaceutical delivery

INTRODUCTION:

Drug delivery systems that can specifically control the release rates and target drugs to a specific site of body had a vast impact on the health care system. Various consistent and predictable (conventional) systems were developed for systemic drugs delivered through skin under the title of transdermal delivery system (TDS). It has enhanced the safety and efficacy of several drugs

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EVALUATION OF ANTIOXIDANT AND HYPOLIPIDAEMIC POTENTIAL OF HERBAL LEAF EXTRACT

Neeraj Jain*, Neelam Jain[1], Divya Dwivedi[2], Laxmi Mishra[3]

*Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[1]Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.
[2]Sakshi College of Pharmacy, Kanpur- 208017, U.P., India.

[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neeraj Jain
Address: Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
Email id: jneerajdops@gmail.com
Contact no: +91 8462933618

ABSTRACT

Objective: The present study was aimed to evaluate the leaves of *Elaeocarpus ganitrus* for its antioxidant and hypolipidaemic potential.

Methods: E. ganitrus leaf powder was extracted in ethanol and the crude extract was divided into aqueous ethyl acetate, butanol, methanol and 70:30 (ethanol: water) mixture yielded pure compounds like gallic acid, quercetin and ellagic acid. Ethanolic extracts of leaves were subjected to phytochemical screening to determine the presence of alkaloids, steroids, saponins, glycosides and flavonoids. Free radical scavenging techniques (DPPH and ABTS) and the ferric reducing antioxidant power (FRAP) were used to measure the antioxidant activity. Diet-induced hyperlipidemic model and triton-induced hyperlipidaemic model was used to measure the hypolipidaemic potential.

Results: Based on the findings, it was concluded that *E. ganitrus* is a very plant in several components such as flavonoids, triterpenes, quercetin and carbohydrates. The active fraction of *E. ganitrus* leaves showed potent antioxidant activity against DPPH free radical. Triton-induced hyperlipidemic control rats had significantly higher serum lipid and lipoprotein levels. Simultaneously, a rise in HDL-cholesterol was noted. When compared to hyperlipidemic controls, *E. ganitrus* leaves chloroform extract significantly lowered blood lipids ($p<0.001$).

Conclusion: Thus, the leaves of *E. ganitrus* may be considered as a promising plant extract for the control of oxidation and hyperlipidaemia.

KEYWORDS

E. ganitrus leaves; Hypolipidemia; Anti-oxidant; Cholesterol; DPPH.

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ASSESSMENT OF CELL MEDIATE IMMUNE RESPONSES AFTER ADMINISTRATION OF LIPOSOMAL STRONG IMMUNOMODULATORY ANTIGEN OF *B. MALAYI*

Neeraj Jain*, Neelam Jain[1], Jagat Pal Yadav[2], Shubhrat Maheshwari[3], Lakshmi Mishra[4]

*Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

[1]Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.

[2]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur-228118, U.P., India

[3]Rajarshi Rananjay Sinh College of Pharmacy, Amethi-227405, U.P., India.

[4]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, U.P., India.

***Corresponding author name:** Neeraj Jain

Address: Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

Email id: jneerajdops@gmail.com

Contact no: +91 8462933618

Abstract

Objective: The present study was aimed on developing and characterizing Liposomal Delivery System loaded with antigen of filaria parasite *B. malayi* extracted protein for assessment of Cell Mediate Immune responses of antigen.

Methods: Liposomes were prepared by Reverse Phase Evaporation (REV) method (Szoka and Papahadjopolus; 1978) with slight modification using molar ratio of Soya PC:PE:Cholesterol in different molar concentration.

Results: NO release from peritoneal macrophages of the animals (Gr.I, II, III, IV and V) was increased by exposure to LPS or no exposure to any stimulants in-vitro as compared to cells of non-immunized animals (Gr.V). In summary, F6 was able to induce greater NO production. The TNF-α release in cells of F6 immunized animals was elevated in response to F6, LPS or no stimulation in-vitro over non-immunized ones. The IFN-γ release in cells of F6 immunized animals was elevated in response to F6 or without any stimulation in-vitro in comparison to non-immunized ones. Up-regulation in Th-I responses and down-regulation in Th-II responses show that the immunological cytokines were in function and cause triggers to body immunity to destroy the parasite, the cytokines production checked at mRNA transcription level using RT-PCR.

Conclusion: These results suggest that the liposomal antigen delivery system shows Th-1/Th-2 promising responses towards vaccine development.

Keywords: Th-1/Th-2 responses, cytokinens, IFN –γ, BmAFII, , B. malayi, TNF-α, RTPCR liposomes.

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LIPOSOMAL MEDIATED ANTIGEN DELIVERY: ISOLATION AND CHARACTERIZATION

Neeraj Jain*, Neelam Jain[2], Akhilesh Kumar[3], Sayantan Dutta[4], Arpita Chaudhary[5]

*Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

[1]Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.

[3]CSIR-CIMAP, Kukrail, Lucknow-226015, U.P., India.

[4]NSHM Knowledge Campus, Kolkata-700053, West Bengal, India.

[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neeraj Jain

Address: Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

Email id: jneerajdops@gmail.com

Contact no: +91 8462933618

Abstract

Objective: The present study was aimed on developing and characterizing Liposomal Delivery System loaded with antigen; filaria parasite extracted protein for better sustain release antigen profile.

Methods: Liposomes were prepared by Reverse Phase Evaporation (REV) method (Szoka and Papahadjopolus; 1978) with slight modification using molar ratio of Soya PC:PE:Cholesterol in different molar concentration.

Results: In the present study the storage stability of the vesicles was determined by measuring the vesicle size, residual antigen content and antigen integrity before and after 30 Days at 4±1ºC and 25±1ºC. In Soya PC:PE:CH liposomes only a slight increase in size on storage at 25±1ºC and insignificant change in size on storage at temperature 4±1ºC occur, indicate that Soya PC:PE:CH liposome are more stable than conventional Soya PC:CH liposomes. Percent of residual antigen remain in liposomes by assuming the initial content to be 100%, in Soya PC:PE:CH liposomes only 14-15% antigen was lost at temperature 25±1ºC and 5-6% antigen was lost on storage at 4±1ºC. Antigen integrity was evaluated by performing the SDS -PAGE of the liposome formulations. (Optimized CL3 formulation stored at 4±1ºC) after 30 Days. Antigens were found to be intact in the formulation stored at 4±1ºC after 30 days. There was no effect of storage on structural integrity of the antigen (fig; 9.5B and fig; 9.5C).

Conclusion: These results suggest that the liposomal antigen delivery system is promising carriers for antigen delivery and vaccine development.

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Development and Characterization of Niosomal Gel Containing Dipivefrin Hydrochloride for Glaucoma Treatment

Neeraj Jain*[1], Anurag Verma[1], Vaibhav Rastogi[1], Neelam Jain[2], Aditi Chaudhary[3]

[*1]Teerthanker Mahaveer College of Pharmacy, Teerthanker Mahaveer University, NH-24, Lodhipur Rajput, Delhi Road, Moradabad-244001, Uttar Pradesh, India

[2]Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.

[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neeraj Jain

Address: Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

Email id: jneerajdops@gmail.com

Contact no: +91 8462933618

ABSTRACT

Objective: The present study was aimed on developing and characterizing niosomal gels loaded with adrenergic agonist; dipivefrin HCl for prolonging precorneal residence time and improving bioavailability of drug for glaucoma treatment.

Methods: Dipivefrin HCl niosomes were prepared using various non-ionic surfactants (span 20, span 60 and span 80) in the presence of cholesterol in different molar ratios by ether injection method. The selected formulations were incorporated into carbopol 934 and locust bean gum-based gels.

Results: TEM studies confirmed that niosomes formed were white and spherical in shape and has a definite internal aqueous space with uniform particle size. Formulation F4 composed of span 60 and cholesterol (1:1) gave the highest entrapment (92.16±0.25%) and slower release results after 8 hours (Q8h=61.05±2.87%) among other formulations. The *in-vitro* drug permeation studies showed that there was a slow and prolonged release of drug from niosomal gel formulations as compared to niosomes itself. Considering the *in-vitro* release, niosomal gel formulation G2 were the best among the studied formulations. Gel formulation G2 showed higher spreadability (2.21±1.05 g.cm/s), higher bioadhesive strength (2314±1.29 dynes/cm^2) but slower drug release (Q8h=52.13±1.81%) due to high gelling capacity. No sign of redness, inflammation, swelling or increased tear production was observed by Draize test. The IOP lowering activity of selected formulation was detected and compared with marketed Pilopine HS® gel. G2 formulation showed relative bioavailability 2.64 times more than bioavailability of marketed Pilopine HS® gel.

Conclusion: These results suggest that the niosomal gels containing dipivefrin HCl are promising carriers for glaucoma treatment.

Keywords: Niosomes, Dipivefrin HCl, Niosomal gel, Draize test, IOP, Antiglaucomatic activity.

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ISOLATION, PREPARATION AND CHARACTERIZATION OF VACCINE FOR FILARIASIS

Neeraj Jain*, Neelam Jain[2] Ajeet Gangwar[2], Aditi Chaudhary[3], Ravi Kumar[4]

*Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

[1]Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.

[2]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly-243503, U.P., India.

[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

[4]Narayan Institute of Pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram-821305, Bihar, India.

***Corresponding author name:** Neeraj Jain

Address: Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

Email id: jneerajdops@gmail.com

Contact no: +91 8462933618

Abstract

Objective: The present study was aimed on isolation and characterizing of antigen of filaria parasite for better immunomodulation effect of isolated antigen for make it available as ideal vaccine candidate.

Methods: Keeping in view their similarity of immune responses to human, the method as previously described in animal is used as model for experimental purpose.

Results: Antigen integrity was evaluated by performing the SDS -PAGE of the eluated protein. Antigens were found to be intact in the formulation stored at 4±1ºC after 30 days. Potential immune-effective fraction F6 is identified and isolated from Protein extract. SDS-Page of BmAII and F6 showed bands between 10.0 and > 180kDA and 54 and 68 kDA, respectively. The investigations proved that F6 as a potential source of vaccine candidate(s) and the present study is found satisfactory to select the F6 of *B. malayi* to recommend it as strong vaccine candidate for future study.

Conclusion: These results suggest that the F6 fraction of eluated protein is having promising responses towards vaccine development.

Keywords: Antigen, Filaraia Parasite, BmAFII, Isolation of Antigen, B. malayi.

1. INTRODUCTION

Lymphatic filariasis (LF) commonly known by the name elephantiasis is a mosquito-borne tropical disease caused by the filarial nematodes Wuchereria bancrofti, Brugia malayi and Brugia timori, elicits a wide spectrum of pathological disorders of the lymphatic system with varied clinical manifestations. The filarial parasites can survive in the human for many years causing

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LIPOSOMAL ANTIGEN DELIVERY SYSTEM: ISOLATION, PREPARATION, CHARACTERIZATION, *IN-VITRO* STUDIES, HUMORAL IMMUNITY (HI) AND CELL MEDIATE IMMUNITY (CMI) ASSESSMENT (TH-1/TH-2 IMMUNE RESPONSE INDUCED BY IMMUNOMODULATORY LIPOSOMAL ANTIGEN OF *B. MALAYI)*

Neeraj Jain*[1], Neelam Jain[2], Jagat Pal Yadav[3], Shubhrat Maheshwari[4], Rajesh Nath[5], Pratiksha Jayaswal[6]

*[1,5]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[2]Faculty of Pharmacy, Oriental University, Indore-453555, Madhya Pradesh, India.
[3]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur-228118, U.P., India
[4]Rajarshi Rananjay Sinh College of Pharmacy, Amethi-227405, U.P., India.
[6]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

***Corresponding author name:** Neeraj Jain
Address: Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
Email id: jneerajdops@gmail.com
Contact no: +91 8462933618

Abstract

Objective: The present study was aimed on developing and characterizing liposomal delivery system loaded with antigen of filaria parasite for better sustain release, immunomodulation effect of isolated antigen.

Methods: Liposomes were prepared by reverse phase evaporation (REV) method with slight modification using molar ratio of Soya PC:PE:Cholesterol in different molar concentration.

Results: In the present study percent of residual antigen remain in liposomes by assuming the initial content to be 100%, in Soya PC:PE:CH liposomes only 14-15% antigen was lost at temperature 25±1ºC and 5-6% antigen was lost on storage at 4±1ºC. Antigen integrity was evaluated by performing the SDS -PAGE of the liposome formulations (Optimized CL3 formulation stored at 4±1ºC) after 30 Days. Antigens were found to be intact in the formulation stored at 4±1ºC after 30 days. The levels of F6 specific IgG1, IgG2a and IgG2b antibodies were found to be elevated in immunized animals over non-immunized controls. Analysis of IgG-subclasses revealed that all the subclasses at (1:25 dilution) increased several folds over the

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A SYSTEMIC REVIEW ON USE OF HERBAL MEDICINES IN THE PREVENTION AND TREATMENT OF ALZHEIMER'S DISEASE

Ravi Kumar [1*], Rani Kumari[1], Aditi Chaudhary[2], Arpita Choudhary[2], Jagat Pal Yadav[3], Shubhrat Maheshwari[4], Neeraj Jain[5], Neelam Jain[6]

[1]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[2]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur (U.P.) India-209217

[3]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

[4]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India

[5]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

[6]Faculty of Pharmacy, Oriental University, Indore, M.P, India

***Corresponding author:**

Ravi Kumar**,** Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

(Email id – ravi09784@gmail.com)

Abstract:

Alzheimer's disease, also known as dementia (AD) is a multifaceted, progressive neurodegenerative illness marked by diminished memory, personality changes, and cognitive impairment. While the specific etiology of Alzheimer's disease is unknown, new research suggests that lifestyle, food, environmental, and hereditary variables all have a role in disease progression. To present, pharmaceutical therapies have had no effect on disease progression. Over the last decade, more than 200 potential drugs have failed clinical trials, indicating that the illness and its causes are likely to be complicated. Medicinal plants and herbal therapies are gaining popularity as complementary and alternative interventions, and they can be used to produce medication candidates for Alzheimer's disease.

Indeed, the use of numerous herbal remedies and their primary polyphenols in the management of AD has been detailed in a number of scientific investigations. Alzheimer's disorder is an inescapable neurological ailment in which memory loss, cognitive decline, and ultimately dementia are brought on by the demise of brain cells. For those 65 years of age and older, it is the most frequent cause of dementia. 10% of those over 65 and 50% of those over 85 are affected by it. In the United States of America (U.S.), there are about 4 million Alzheimer's sufferers, and yearly treatment expenditures are $100 billion. It is among the top four causes of mortality in the US and is spreading to many other nations. With Alzheimer's, the size of the entire brain decreases because the tissue contains gradually fewer neuronal

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HARNESSING THE POWER OF HERBAL IMMUNOMODULATORS: A COMPREHENSIVE REVIEW

Ravi Kumar [1*], Rani Kumari[1], Aditi Chaudhary[2], Arpita Choudhary[2], Jagat Pal Yadav[3], Shubhrat Maheshwari[4], Neeraj Jain[5], Neelam Jain[6]

[1]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[2]Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Kanpur (U.P.) India-209217

[3]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

[4]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India

[5]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

[6]Faculty of Pharmacy, Oriental University, Indore, M.P, India

***Corresponding author:** Ravi Kumar**,** Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

(Email id – ravi09784@gmail.com)

Abstract: The use of herbal immunomodulators has gained considerable attention in recent years owing to their potential in enhancing the body's immune response and maintaining overall health. This review paper aims to provide a comprehensive overview of various herbal immunomodulators, their mechanisms of action, and their therapeutic applications. We discuss the scientific evidence supporting the efficacy and safety of these botanicals, their traditional uses, as well as ongoing research and future perspectives in this burgeoning field.

Keywords: Antigen Presenting Cell, Deoxyribonucleic Acid, Interferon(Chemokine), Interleukin(Chemokine), Inducible Nitric Oxide Synthase,Minimum Inhibitory Concentration

1.1 IMMUNE SYSTEM

An immune system is a system of biological structures and processes within an organism that protect against disease by identifying and killing pathogens and tumours cells.It detects a wide variety of agents ,from viruses healthy cells and tissues in order to function properly . detection is complicated as pathogens can evelve rapidly ,producing t avoid immune system and allow the pathogens to successfully infect their host[1.]

To survivethis challenge ,multiple mechanisms evolved that recognize and neutralize pathogens . even simple unicellular organisms such as bacteria possess enzymes system that protect against viral infections other basic immune mechansism evolved in ancient eukaryotes and remain in their modern descendants ,such as plants ,fish,reptiles,and insects . these meschanisms include antimicrobial peptides called defenses,phagocytosis,and the complement system .vertebrates such as humans have even more

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CURRENT PROGRESS IMPACTS AND CHALLENGES OF ANTIMICROBIAL DRUG RESISTANCE: CHALLENGES AND SOLUTIONS

Richa Shakya[1*], Lakshmi Mishra[2], Aditi Chaudhary[2], Sneha Kushwaha[2], Ravi Kumar[3], Neeraj Jain[4], Neelam Jain[5]

[1]Noida Institute of Engineering and Technology (Pharmacy Institute), Plot no.19, Knowledge Park -2, Greater Noida, U.P. Pin Code- 201306

[2]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur, Uttar Pradesh

[3]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P.

[5]Faculty of Pharmacy, Oriental University, Indore, M.P.

Corresponding Author: Richa Shakya, Noida Institute of Engineering and Technology (Pharmacy Institute), Plot no.19, Knowledge Park -2, Greater Noida, U.P. Pin Code- 201306

***Email Id-**richa.shakya@yahoo.com

Abstract: Antimicrobial drug resistance has emerged as a significant global health threat, jeopardizing our ability to effectively treat infectious diseases. Overuse and misuse of antibiotics, coupled with the lack of development of new antimicrobial agents, have contributed to the rapid spread of resistance among bacterial, viral, fungal, and parasitic pathogens. This review provides an overview of the current status of antimicrobial drug resistance, highlighting key mechanisms of resistance, the impact on patient outcomes and healthcare systems, and the urgent need for concerted efforts to address this critical issue. Strategies to combat antimicrobial resistance include antimicrobial stewardship programs, development of novel antimicrobial agents, promotion of infection prevention and control measures, and public education campaigns to raise awareness about appropriate antibiotic use. Antimicrobial drug resistance poses a significant threat to public health globally. This review examines the current landscape of antimicrobial resistance, including its mechanisms, epidemiology, and impact on healthcare. Strategies to combat resistance, such as stewardship programs, development of new drugs, and alternative therapies, are also discussed.

Collaboration among healthcare providers, policymakers, researchers, and the pharmaceutical industry is essential to mitigate the further spread of antimicrobial resistance and safeguard the effectiveness of antimicrobial therapy for future generations.

Keywords: Antimicrobial resistance, antibiotics, drug resistance, stewardship, infection control, public health.

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ADVANCEMENTS IN TARGETED CANCER THERAPIES: FROM MONOCLONAL ANTIBODIES TO IMMUNOTHERAPY

Shubhrat Maheshwari[1*], Jagat Pal Yadav[2], Ajeet Kumar[3], Alka[4], Ravi Kumar[5], Abhishek Mishra[6], Shailendra Singh Bhadauriya[6], Somesh Shukla[6], Neeraj Jain[7]

[2]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India

[2]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India

[3]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India

[5]Narayan institute of pharmacy, Gopal Narayan Singh University, Jamuhar, Sasaram, Bihar-821305

[6]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

[7]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad U.P, India

***Corresponding Author- Shubhrat Maheshwari, Faculty of Pharmaceutical Sciences, Rama University, Mandhana, Bithoor Road, Kanpur, Uttar Pradesh-209217(India)**

Email Id: shubhrat1996@gmail.com

Abstract

The field of cancer treatment has undergone substantial transformation in recent decades, experiencing notable progress in the development of targeted therapeutic approaches. This abstract provides an overview of the progression from monoclonal antibodies to immunotherapy in the realm of cancer treatment. Monoclonal antibodies initially hailed for their specificity and efficacy in targeting cancer cells, paved the way for the development of more sophisticated immunotherapeutic approaches. Immunotherapy, harnessing body's own immune system to combat cancer, has emerged as a promising avenue for personalized cancer treatment. Key milestones in the development of monoclonal antibodies, including rituximab and Trastuzumab, underscore the transformative impact of targeted therapies on patient outcomes. Furthermore, the advent of immune checkpoint inhibitors, such as Pembrolizumab and Nivolumab, represents a paradigm shift in cancer therapy, offering durable responses and improved survival rates across various malignancies. Despite these advancements, challenges persist, including immune-related adverse events and treatment resistance. Future directions in targeted cancer therapies focus on refining patient selection criteria, elucidating mechanisms of resistance, and exploring novel combination strategies to optimize therapeutic efficacy. In conclusion, the journey from monoclonal antibodies to immunotherapy epitomizes the relentless pursuit of precision medicine in oncology, offering renewed hope for patients battling cancer.

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Ramendra Gupta et al/Evaluation of Antioxidant Potential of Ficus carica Leaf Extract

Evaluation of Antioxidant Potential of Ficus carica Leaf Extract

Ramendra Gupta, Neelam Jain, Neeraj Jain, Shubhrat Maheshwari
*Research Scholar, Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[1]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[2]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

Abstract

The main aim of the study was to investigate the antioxidant potential of leaf extracts of *Ficus carica*. The phenolic, flavonoid and anthocyanin contents of these extracts and their antioxidant activities were determined by the radical DPPH*, ABTS*+ and FRAP assays. The results of the phenolic and flavonoid compounds of *Ficus carica* leaves ranged from 12.84 mg gallic acid equivalents (GAE) and 5.02 mg EQ/g dry matter. The scavenging activity (IC_{50}) against the radical 346.97 DPPH* and ABTS*+ is 287.56 µg/mL for leaves and 50.12 µg/mL for FRAP assay. The results revealed that the administration of *Ficus carica* (FC) leaf extracts resulted in a significant antioxidant property.

Keywords: *Ficus carica*, antioxidant activity, DPPH assay, FRAP assay.
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1. Introduction

Fig (Ficus carica) is seasonal fruit that is may be originated from the Middle East, which is one of the early cultivated fruit species and currently is an important crop worldwide. The common fig grows in natural ecosystems of the Mediterranean basin. Dried figs are available to consumers worldwide, at any time of the year. The fig tree is a member of the mulberry family (Moraceae). Fig products are excellent examples of natural products that are widely used as a food source and a source of traditional medicine. In folk medicine, Fig root is used in the treatment of leukoderma and ringworms. The fruit of the fig tree has antipyretic, purgative, and aphrodisiac properties which have been shown to be useful in treating inflammation and paralysis.

The evolution of the world and different modern man lifestyles of have sparked the development of new traditions, new behaviors and new diets containing higher calories and fats, which contribute to the emergence and increase of some diseases such as cancers, cardiovascular and metabolic diseases, diabetes, dyslipidemia and obesity [1]. Several therapeutic effects have been attributed to *Ficus carica*, such as hypoglycemic [7, 8], antibacterial and antiviral effects [10–12].

2. Materials and methods

a. Plant material

Leaf samples of *F. carica* were harvested in September 2021 (Botanical Garden, Oriental

A Review on Nanotechnology and Histotripsy for Cancer Treatment

Ashish K. Parashar, Lalit K. Tyagi, Vandana Arora, Neelam Jain, Neeraj Jain, Shubhrat Maheshwari
*[1, 2] Lloyd Institute of Management and Technology, Greater Noida, Uttar Pradesh, India-201306
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.

[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

Abstract

Nanotechnology and histotripsy are two emerging fields in cancer treatment that hold great promise for improving patient outcomes. This review article aims to provide an overview of the latest advancements in these fields and their potential applications in the treatment of various types of cancer. Nanotechnology involves the manipulation of matter at an atomic and molecular scale to create materials with unique properties. In the context of cancer treatment, nanotechnology offers the potential for targeted drug delivery, imaging, and therapy. On the other hand, histotripsy is a non-invasive therapeutic technique that uses focused ultrasound to mechanically fractionate tissues, including cancerous tumors, without the need for surgery or radiation. This review article will delve into the recent developments in nanotechnology-based cancer therapies, such as the use of nanoparticles for drug delivery and imaging, as well as the applications of histotripsy in tumor ablation and tissue disruption. Furthermore, the potential synergistic effects of combining nanotechnology and histotripsy for enhanced cancer treatment will be explored. By providing a comprehensive summary of the latest research and clinical applications in these fields, this review aims to contribute to the understanding of how nanotechnology and histotripsy can revolutionize cancer treatment and improve patient outcomes.

Keywords: Cancer, Nanotechnology, Histotripsy, Drug delivery, Targeting, Imaging.
DOI Number: 10.48047/Nq.2022.20.17.Nq880302 **Neuroquantology 2022; 20(17):2364-2375**

Introduction

Cancer continues to be a significant global health concern, and the search for innovative and effective treatment strategies remains a top priority in medical research. In recent years, nanotechnology and histotripsy have emerged as promising areas of focus for combating cancer [1]. Nanotechnology, with its ability to engineer materials at the molecular level, offers the potential for precise and targeted cancer therapy, while histotripsy, utilizing focused ultrasound, presents a non-invasive alternative to traditional cancer treatment methods [2-3].

By examining the synergistic effects of combining these two cutting-edge technologies, we hope to present a comprehensive overview of the potential impact of nanotechnology and histotripsy on cancer treatment [4]. This review aims to provide valuable insights into the ongoing efforts to revolutionize cancer therapy and improve patient outcomes.

In recent years, nanotechnology has emerged as a promising approach for cancer therapy [5]. By utilizing nanoparticles as carriers, drugs can be delivered in a targeted and controlled manner to cancer cells. This approach offers

Binders Effect on the Dissolution Rate of Metformin Hydrochloride Tablets

Surendra Pardhi, Neeraj Jain, Neelam Jain, Arpita Chaudhary
[*1]Dept of Pharma Sciences, Sardar Patel University, Balaghat, M.P., India
[2]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[4]Faculty of Pharmaceutical sciences Rama University, Kanpur-209217, U.P., India.

ABSTRACT

The objective of the present study is to evaluate the effect of commonly used binders on the dissolution rate of metformin tablets. Tablets each containing 100 mg of Metformin hydrochloride were formulated employing commonly used binders namely acacia, starch paste, poly vinyl pyrollidine (PVP K30), sucrose, methyl cellulose LV and hydroxy propyl methyl cellulose (HPMC E5LV). For comparison purpose all the binders were used at the same strength, 2% w/v in the formula. The tablets were prepared by wet granulation method. All the tablets prepared were evaluated for drug content, hardness, friability, disintegration time and dissolution rate as per official methods. All the metformin tablets prepared using various binders disintegrated within 2 min. Tablets formulated using acacia and sucrose as binders disintegrated very rapidly in 30 and 40 sec respectively when compared to others. Many variations were observed in the dissolution characteristics of the metformin hydrochloride tablets prepared and commercial brands tested. The binder used has significantly influenced the dissolution rate of metformin tablets prepared. Among all, tablets formulated using acacia and commercial product C3 gave rapid and higher dissolution of metformin hydrochloride. The order of increasing dissolution rate (K_1) observed with various binders was acacia = C3 > starch paste > sucrose> methyl cellulose > PVP K30> C1 > C2 > HPMC. Tablets formulated using HPMC as binder and commercial brands C1and C2 gave relatively low dissolution of metformin hydrochloride. All the metformin tablets prepared and the three commercial brands tested fulfilled the dissolution rate specification of NLT 70% in 45min prescribed for metformin tablets in IP 2010. Hence acacia, starch paste, poly vinyl pyrollidine (PVP K30), sucrose and methyl cellulose LV are recommended as binders for the preparation of metformin hydrochloride tablets.

Keywords: Metformin hydrochloride, Tablets, Binder, Dissolution rate
DOI Number: 10.48047/NQ.2022.20.15.NQ88814 **Neuroquantology 2022; 20(15):8180-8185**

INTRODUCTION

Metformin hydrochloride is a widely prescribed oral anti diabetic drug used for the treatment of type II diabetes mellitus. Metformin hydrochloride and its tablets are official in IP 2010. Though metformin hydrochloride is freely soluble in water, IP 2010 prescribed a dissolution rate test specification of NLT 70% in 45 min for metformin tablets. In the case of tablet dosage form the formulation additives or excipients greatly influence the dissolution rate of poorly soluble as well as freely soluble drugs. In tablet formulation the binder and disintegrant are critical ingredients that influence the dissolution rate of drugs from tablets[1]. Several studies reported[2-7] the effect of binders and disintegrants on the dissolution rate of drugs from tablet dosage forms. When three brands of metformin tablets procured from the local

Assessment of Ficus carica Linn Leaves Extract for Antidepressant Activity

Neelam Jain, Neeraj Jain, Arpita Chaudhary
[*1]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[2]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[3]Faculty of Pharmaceutical sciences Rama University, Kanpur-209217, U.P., India.

ABSTRACT:

The present study was undertaken to evaluate the phytochemical and pharmacological activity of *Ficus carica* leaves extract. The efficacy of the fractions was compared with the standard reference drug imipramine. All the studies were conducted according to the ethical guidelines of CPCSEA Antidepressant activity of *Ficus carica Linn* leaves extract obtained from two different Solvents i.e. Chloroform (FCCH) and Ethanol (FCETH) was evaluated in Albino Wistar rats by using despair swim test (DST) model at the doses of 100mg/kg as lower dose and 200mg/kg as higher dose. Imipramine (25mg/kg) was used as standard drug for antidepressant activity. Antioxidant assay like DPPH Scavenging assay was also carried out to support the antidepressant activity. The leaves of FC were defatted with petroleum ether and fractionated with chloroform and ethanol. All the fractions were subjected for preliminary phytochemical screening, using various qualitative and quantitative tests.The preliminary phytochemical screening of FC has revealed the presence of carbohydrates, tannins, phenols and flavonoids in ethanolic fraction. Chloroform fraction showed positive results toward Phenols, flavonoids, alkaloids, tannins, glycosides, and steroids. Ethanol and chloroform extract (100 and 200 mg/kg p.o.) of FC administered orally for 1st, 8th and 15th successive day had decresed the immobility periods significantly in a dose-dependent manner in DST, showing significant antidepressant-like activity. The activities of the extracts were found to be comparable to imipramine in despair swim test.

Conclusion: FCCH and FCETH exhibit significant antidepressant activity at the dose of 100 and 200mg/kg which was comparable to imipramine which could be attribute to its effect on neurotransmitters and antioxidant activity respectively.

Keywords: *Ficus carica Linn*, depression, despair swim test, antioxidant activity, antidepressant activity
DOI Number: 10.48047/NQ.2022.20.15.NQ88815 **Neuroquantology 2022; 20(15):8186-8196**

Antidiabetic Activity of *Ficus carica* Leaf extract

Ramendra Gupta, Neelam Jain, Neeraj Jain, Arpita Chaudhary

*Department of Pharmacy, Oriental University, Indore-453555, M.P., India.
[1]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[2]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

Abstract:

To evaluate the dichloromethane extract of *Ficus carica* leaves (FCL) had a hypoglycemic impact in diabetic mice, as well as to identify the bioactive components in the extract and analyze their anti-hyperglycemia potential in HepG2 cells. The antidiabetic activity of dichloromethane extract of *Ficus carica* leaves was evaluated in diabetic mice induced by streptozotocin (STZ,100 mg/kg) combined with high-fat diet. The fasting blood glucose (FBG), blood lipids, oral glucose tolerance, glycated hemoglobin (HbA1c), and pathological change effects of the extract were measured after administering two doses of the extract (500 and 1000 mg/kg). The hypoglycemic activity of isolated compounds was investigated in palmitic acid (PA)-induced HepG2 cells. FCL extract lowers blood glucose and improves blood lipids and the pancreatic β-cell also tend to recover whether the psoralen is removed or not. Meanwhile, three coumarins except psoralen were isolated from dichloromethane extract: 3,4-dihydrop-soralen, umbelliferone and 7-hydroxyl-6-methylcoumarin. Psoralen and umbelliferone promoted glucose uptake in HepG2 cells.

Keywords: FCL, diabetes, dichloromethane extract, psoralen, umbelliferone
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Introduction:

Diabetes is a group of metabolic disease characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. According to the International Diabetes Federation, there are roughly 463 million diabetics worldwide in 2019, with that number anticipated to rise to 700 million by 2045.[1] Diabetes has become much more common in recent decades, with type 2 diabetes accounting for more than 90% of cases.[2] Chronic hyperglycemia has already shown to increase the risk of cardiovascular disease and organ failure.[3] As a result, effective blood glucose control is a critical step preventing or correcting diabetic complications and enhancing the quality of life of diabetic patients. Nowadays, the agents used for diabetes treatment mainly are synthetic drugs such as biguanides, sulfonylureas, thiazolidinediones, SGLT2 inhibitors and GLP-1.[4,5] Synthetic drugs are effective and can improve glucose concentration to varying degrees. However, all these medications have specific toxic side effects. Long-term use of insulin causes decreased insulin receptor sensitivity, resulting in insulin resistance and eventually leading to worsening of control conditions.[6] Biguanides are often associated with gastrointestinal adverse reactions. Major concerns related to the use of sulfonylureas are hypoglycemia and weight gain. The use of pioglitazone has been associated with an increased risk of edema, heart failure and weight gain.[7]Genital and urinary tract infections

Designing of Low-Cost Homemade Instrument to Measure Mechanoluminescence Property

Ram Krishna, Praveen Yadaw, N Kumar Swamy, Anand mahalwar, Neelam Jain, Neeraj Jain, Sikha Jaiswal

[1,3,4] Material Science Research Lab, ISBM University, Raipur-493996, Chhattisgarh, India.
[2]Department of Physics, Kalinga University, Raipur-493996, Chhattisgarh, India
[5]University Institute of Pharmacy, Oriental University, Indore-452003, Madhya Pradesh, India
[6]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad-244102, Uttar Pradesh, India
[7] Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

Abstract

The various type luminescence measuring instruments, demand increased due to the development of a extensive variety of materials generating luminescence. These materials are an excellent candidate for display and lighting application. This paper covers basic concepts and designing a mechanoluminescence detection homemade setup. The light detection system comprises a photomultiplier tube (PMT) with suitable light filters (i.e. Lucite crystal). The luminescence stimulation system includes a mechanical heating element and an optical stimulation unit. It is claimed that this is the homemade and low-cost setup for the mechanoluminescence detection spectroscopic technique.

Keywords: Mechanoluminescence Handmade instrument (MHI), Thermoluminescence, Heat Stimulated Luminescence.

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1. Introduction

Rare earth-doped inorganic phosphors are used extensively in various applications such as lighting, X-ray imaging, and scintillators for colour display. Recently, there has been a growing focus on research in light-emitting diodes (LEDs) due to their many merits, such as being environmentally friendly, highly efficient, and having a longer lifetime (1,2). Over the past few years, white LEDs made using near-ultraviolet (NUV), coupled with red, blue and green phosphor, have attracted much attention. The current interest focuses on novel down-converting phosphors that can be effectively excited with near-UV light. As far as the materials themselves are concerned, silicon oxy-nitride luminescence materials are desirable because of their high efficiency (3), chemical stability, good thermal quenching, wide emission range and the ability to exhibit intense intensity luminescence.

Mechanoluminescence (ML) mechanisms have determined the nature of electron traps and trapping processes in excited phosphors. Mechanoluminescence is the emission of a photon in the form of light from a solid inorganic phosphor material when it is heated by mechanically, direct or after exposure to forms of radiation such as UV radiation (or α, β, γ, X-ray). The graph of the intensity of this emitted light versus temperature is the Mechanoluminescence glow curve. Each natural or synthetic phosphor possesses result exhibit different glow curves. This glow peak represents recombination centre related to the traps. Many factors such as crystal structure, band gap, synthesis process, crystal size, lattice imperfections, mechnoheating and main impurities in solids are responsible for

Photosensitizers in Photodynamic Therapy: A Current Approach

Neeraj Jain, Neelam Jain, Laxmi Mishra
Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad-244102, Uttar Pradesh, India
Facultycof Pharmacy, Oriental University, Indore-452003, Madhya Pradesh, India
Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

Abstract
Photosensitization can be defined as a process in which a reaction to normally harmless radiation is induced by the introduction of a specific radiation-absorbing substance (photosensitizer) that causes another component (substrate) to be changed by the radiation. Photosensitivity is characterized by phototoxic and photoallergic effects. Drugs and chemicals may interact with UV to induce photosensitivity. Photosensitive disorders may be classified as those entirely caused by solar exposure and the photoaggravated disorders. Those in the former category include polymorphic light eruption, hydroa vacciniforme, actinic prurigo, solar urticaria and chronic actinic dermatitis. Photosensitivity can be diagnosed by photo test, photo patch test and photo drug test. Recently the photodynamic therapy (PDT) is used for the treatment of cancers. There are various photosensitizers such as photofrin, foscan, 5-Aminolevulinic acid (5-ALA) etc which used in photodynamic therapy. Photosensitizers are also used to treat vitiligo, microbial infections and acne.

Keywords: Photosensitizer, Juvenile spring eruption, Photodynamic therapy, Vitiligo, Acne.
DOI Number: 10.48047/nq.2022.20.8.nq221161 **NeuroQuantology 2022; 20(8): 11258-11267**

Introduction
The term photosensitivity is used to describe any cutaneous reactions to light. Photosensitivity reaction occurs when a photosensitizing agent in or on the skin reacts to normally harmless doses of UV or visible light. It is classified as phototoxic or photoallergic reaction [1, 2, 3, 4, 5]. Phototoxic reaction results from direct damage to tissue caused by a photoactivated compound. Photoallergic reactions are cell-mediated immune responses to a photoactivated compounds. Phototoxicity is much more common than photoallergic reaction. Phototoxicity is an irritation of the skin occurs after exposure to UV light. Photoallergy is an allergic reaction of the skin to UV light. Both reactions occur in sun-exposed areas of skin including the face, neck, hands and forearms. A widespread eruption suggests exposure to a systemic photosensitizer whereas a localized eruption indicates a reaction to a locally applied topical photosensitizer. Acute phototoxicity is characterized by an exaggerated sunburn reaction with erythema, edema, blistering, weeping and desquamation that occurs within minute to hours of light exposure. Photoallergic reaction resemble allergic contact dermatitis, their onset is delayed by as long as 24-72 hours after exposure to the drug and light [6].

Photosensitization Mechanism
Phototoxicity
Various compounds especially those which have at least one resonating double bond or an aromatic ring that can absorb radiant energy cause direct damage to tissues which results in phototoxic reactions. Most compounds having those bonds and rings are activated in between wavelengths of UV-A (320-400 nm) range, although some compounds have peak absorption within the UV-B or visible range [7]. On exposure to UV rays a transient redness appears in few minutes. The major erythema response of skin to UV rays is delayed, beginning 2-6hrs after exposure and reaching a maximum in 12-24 hrs

Preparation & Optimization of Non-Ionic Surfactant based Vesicular System for Glaucoma Drug Delivery

Neeraj Jain, Anurag Verma, Vaibhav Rastogi, Neelam Jain, Laxmi Mishra

[*1,2]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad-244102, Uttar Pradesh, India
[3]Faculty of Pharmacy, Oriental University, Indore-452003, Madhya Pradesh, India
[4]Faculty of Pharmaceutical Sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

ABSTRACT

Objective: The present study was focused on developing and characterizing niosomal gel formulations for ocular controlled delivery of an adrenergic agonist; dipivefrin HCl. In present study the pre-formulation studies are showed towards development of Novel formulation.

Methods: Preformulation studies of drug were carried out for identification (physical appearance, melting point and UV spectrophotometric analysis), solubility profile, lipophilicity (Partition Coefficient), compatibility studies by FTIR and thermal behavior by DSC.

Results: The melting point of dipivefrin HCl was found to be 147.6±3°C. The log P value was found to be 3.14±0.02, from which it can be interpreted that drug is highly lipophilic in nature. The scanned λ_{max} were found to be 254 nm. No significant changes were found when FTIR spectra of physical mixture compared with FTIR spectra of pure drug and excipients. This indicates absence of any possible interaction between the drug and excipients which confirms the identity and purity of drug. DSC thermogram of pure drug showed a sharp exothermic peak at 131.202ºC (area=1726.267 mJ, delta H=575.422 J/g) indicating the crystal melting point of the drug.

Conclusion: These results suggest that the dipivefrin HCl serve as suitable candidate for ocular drug delivery system.

Keywords: Dipivefrin hydrochloride, Preformulation, Ocular delivery, Spectrometric analysis, Compatibility.

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INTRODUCTION

Preformulation is a group of studies that focus on the physicochemical properties of a new drug candidate that could affect the drug performance and the development of a dosage form. This could provide important information for formulation design or support the need for molecular modification. Every drug has intrinsic chemical and physical properties which has been consider before development of pharmaceutical formulation. This property provides the framework for drugs combination with pharmaceutical ingredients in the fabrication of dosage form. Objective of preformulation study is to develop the elegant, stable, effective, and safe dosage form by establishing kinetic rate profile, compatibility with the other ingredients and establish physio-

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Liposomes of Phosphatidylcholine-Phosphatidylethanolamines: as Strong Immunomodulatory Adjuvant for Antigen Delivery

Neeraj Jain, Anurag Verma, Vaibhav Rastogi, Neelam Jain, Shubhrat Maheshawari

[*1,2]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad-244102, Uttar Pradesh, India

[3]University Institute of Pharmacy, Oriental University, Indore-452003, Madhya Pradesh, India

[4]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

Abstract

The present study was aimed on developing and characterizing Liposomal Delivery System loaded with antigen for achieving a better sustain release immunomodulating profile. Liposomes were prepared by Reverse Phase Evaporation (REV) method (Szoka and Papahadjopolus; 1978)[1] with slight modification using molar ratio of Soya PC:PE:Cholesterol in different molar concentration. In the present study the storage stability of the vesicles was determined by measuring the vesicle size, residual antigen content and antigen integrity. Percent of residual antigen remain in liposomes by assuming the initial content to be 100%. The levels of F6 specific IgG1, IgG2a and IgG2b antibodies were found to be elevated in immunized animals over non-immunized controls. Analysis of IgG-subclasses revealed that all the subclasses at (1:25 dilution) increased several folds over the controls with IgG1 showing the greatest increase (25.0-fold) followed by IgG2b (3.0fold). Antibodies titers showed the many fold increment of titers on liposomised antigen groups (Gr.I; without booster dose and Gr.IV; with booster dose).IgG showed about 2.2 fold increment in Gr. IV than control group (Gr.V). IgG1 after booster dose showed about 25-fold increment followed by IgG2b than IgG2a. NO release from peritoneal macrophages of the animals (Gr.I, II, III, IV and V) was increased by exposure to LPS or no exposure to any stimulants in-vitro as compared to cells of non-immunized animals (Gr.V). In summary, F6 was able to induce greater NO production. The TNF-α release in cells of F6 immunized animals was elevated in response to F6, LPS or no stimulation in-vitro over non-immunized ones. Up-regulation in Th-I responses and down-regulation in Th-II responses show that the immunological cytokines were in function and cause triggers to body immunity to destroy the parasite.

Conclusion: These results suggest that the liposomal antigen delivery system is a promising Immunomodulating carrier for antigen delivery and vaccine development.

Keywords: Antigen delivery, B. malayi, Soya PC:PE:CH liposomes, Th-1/Th-2 responses, Ig-G, Cytokines, IFN –γ, TNF-α.

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1. Introduction

The World Health Organization (WHO) ranks Lymphatic filariasis (LF) commonly known by the name elephantiasis as the second most common cause of long-term disability and estimated that over 1.25 billion people are at risk of the infection in 83 countries and territories (WHO, 2006a)[2]. Approximately 125 million already have been infected with LF, and over 40 million (WHO, 2004a)[3] are seriously incapacitated and disfigured

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Novel Non-Ionic Surfactant Based Vesicular System for Ocular Drug Delivery: Development, Characterization and Intraocular Pressure Measurement

Neeraj Jain, Anurag Verma, Vaibhav Rastogi, Neelam Jain, Laxmi Mishra

*Research Scholar, Teerthanker Mahaveer College of Pharmacy, Teerthanker Mahaveer University, Moradabad-244001, Uttar Pradesh, India

[1] Teerthanker Mahaveer College of Pharmacy, Teerthanker Mahaveer University, Moradabad-244001, Uttar Pradesh, India

[2]Department of Pharmaceutics, Faculty of Pharmacy, Oriental University, Indore-452010, Madhya Pradesh, India

[3]Faculty of Pharmaceutical sciences, Rama University, Mandhana, Kanpur-209217, U.P., India.

ABSTRACT

The present study was aimed on developing and characterizing niosomal gels loaded with adrenergic agonist; dipivefrin HCl for prolonging precorneal residence time and improving bioavailability of drug for glaucoma treatment. Dipivefrin HCl niosomes were prepared using various non-ionic surfactants (span 20, span 60 and span 80) in the presence of cholesterol in different molar ratios by ether injection method. The selected formulations were incorporated into carbopol 934 and locust bean gum-based gels. TEM studies confirmed that niosomes formed were white and spherical in shape and have a definite internal aqueous space with uniform particle size. Formulation F4 composed of span 60 and cholesterol (1:1) gave the highest entrapment (92.16±0.25%) and slower release results after 8 hours (Q8h=61.05±2.87%) among other formulations. The in-vitro drug permeation studies showed that there was a slow and prolonged release of drug from niosomal gel formulations as compared to niosomes itself. Considering the in-vitro release, niosomal gel formulation G2 were the best among the studied formulations. No sign of redness, inflammation, swelling or increased tear production was observed by Draize test. The IOP lowering activity of selected formulation was detected and compared with marketed Pilopine HS® gel. G2 formulation showed relative bioavailability 2.64 times more than bioavailability of marketed Pilopine HS® gel. These results suggest that the niosomal gels containing dipivefrin HCl are promising carriers for glaucoma treatment.

Keywords: Niosomes, Dipivefrin HCl, Niosomal gel, Draize test, IOP, antiglaucomatic activity.

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INTRODUCTION

Glaucoma is a prevalent neurodegenerative disorder of the eye. Increased intraocular pressure (IOP) and subsequent retinal ganglion cell (RGC) death leading to the loss of visual field characterizes the pathology of primary open angle glaucoma (POAG), which is the most common form. The disease affects over 66

Niosomes as Novel Drug Delivery System: Recent Approaches and Clinical Applications

Raghavendra Kumar Dwivedi, Divya Dwivedi, Aditya Raj Gupta, Rishabh Shukla, Ashish Pal, Neelam Jain, Neeraj Jain, Somesh Shukla, Jay Kumar

[1]Sakshi College of Pharmacy, Kanpur- 208017, U.P., India.
[2] *Advance Institute of Biotech and Paramedical Sciences, Kanpur- 208016,* U.P., India.
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India
[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.
[6]*School of Pharmaceutical Sciences, CSJM UNIVERSITY KANPUR*-208012, U.P., India.

Abstract

Vesicular systems are a revolutionary way of administering drugs in a controlled manner to increase bioavailability and prolong the therapeutic effect. Niosomes are hydrated vesicular structures that include a non-ionic surface active agent, cholesterol, and other lipids. Over the liposomes, niosomes have various advantages, such as delivering drugs to specified sites that are non-toxic, stable for a longer time in different situations, and need low production cost. The first cosmetic industry that produced niosomes was L'Oreal. Later on, in the pharmaceutical sector, its applications were explored. Niosomes are developed by self association of cholesterol and surface active agents in an aqueous phase. Niosomes have the property of biodegradable, biocompatible and non immunogenic structure and also shows the ability for encapsulation of both types of drugs hydrophilic and lipophilic. Over the last few years, it is studied that niosomes may enhance the drug bioavailability, and provides a novel approach for delivering numerous drugs like- protein therapeutic agents, chemical therapeutic agents and gene substances with less toxicity and desired targeted ability. This review provides complete details on niosomes, structure, types, fabrication processes, factors influencing niosomes competence, benefits and drawbacks, implementations, and cites numerous instance of niosomes studies over the last decade.

Keywords- Niosomes, Non-ionic surfactant, Cholesterol, Non toxic, Liposomes, Vesicles.
DOI Number: 10.48047/nq.2022.20.19.nq99556 **Neuroquantology 2022; 20(19):5676-5690**

1. Introduction

Liposomes were the first delivery mechanisms for vesicular drugs, but at various pH they have some drawbacks such as toxicity, low cost and stability problems. Research focus has turned towards niosomes due to the drawbacks of liposomes. Unilamellar, oligolamellar or multilamellar can be niosomes [Bhardwaj, P et al., 2020]. These are called niosomes because niosomes are made up of non-ionic surfactants, and because of these surfactants, they are non-toxic. They can also include cholesterol, or its derivatives, and charged molecules, in addition to non-ionic surfactants. Cholesterol gives the structure rigidity, and the charged molecule maintains the formulation stable. When nonionic surface-active agents arrange themselves, the development of niosomes happens. Due to their design, both hydrophilic and hydrophobic drugs can be used for the loading and delivered [Akbarzadeh, I. et al., 2020, Balin, B. J. et al., 1986, Bhardwaj, Pet al., 2020, Basiri, Let al., 2017]. The bi-layered arrangement of non-ionic surface active agents is termed niosomes fig. (1). These thermodynamically steady bi-layered structures are produced simply as surfactants

Nanosphere Technology: Innovations and Applications

Divya Dwivedi, Raghavendra Kumar Dwivedi, Aditya Raj Gupta, Rishabh Shukla, Ashish Pal, Neelam Jain, Neeraj Jain, Somesh Shukla, Jay Kumar, Sonam Mishra

[1]Sakshi College of Pharmacy, Kanpur- 208017, U.P., India.
[2] Advance Institute of Biotech and Paramedical Sciences, Kanpur- 208016, U.P., India.
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India
[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.
[6]School of Pharmaceutical Sciences, CSJM UNIVERSITY KANPUR-208012, U.P., India.
[7]Department of Pharmacy, Pranveer Singh Institute of Technology, Kanpur--209305, U.P., India.

Abstract:

Nanosphere technology represents a revolutionary breakthrough in the field of materials science, enabling the design and creation of multifunctional nanoparticles with unprecedented properties. This chapter delves into the fundamental concepts, synthesis methods, and diverse applications of nanosphere technology. From medicine to electronics, energy to environmental remediation, the remarkable versatility of nanospheres is reshaping industries and opening new avenues for scientific exploration. Through a comprehensive review of current research and real-world examples, the only aim is to provide an in-depth understanding of nanosphere technology and its potential to drive innovation in the coming decades. Nanosphere technology represents a groundbreaking field at the intersection of nanotechnology, materials science, and biotechnology. This also delves into the fundamental principles, fabrication methods, and diverse applications of nanospheres. These nanometer-scale spherical particles exhibit unique properties and find applications in various industries, including medicine, electronics, energy, and environmental science. This chapter explores the synthesis techniques, functionalization strategies, and potential challenges associated with nanosphere technology.

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1. **Introduction:** The Nanosphere Revolution is the advent of nanotechnology, has ushered in a new era of materials engineering, with nanospheres standing at the forefront of this revolution [1]. This section outlines the significance of nanospheres and their unique properties, setting the stage for an exploration of their synthesis, characterization, and applications. Nanopore technology is a cutting-edge technique used for the analysis and sequencing of biomolecules, primarily DNA, RNA, and proteins, at the single-molecule level. It leverages the unique properties of nanopores – tiny, nanometer-sized pores – to capture, detect, and characterize these molecules as they pass through the pore. This technology has garnered significant interest due to its potential for rapid, portable, and real-time analysis of various biomolecules. [2]

The basic principle of nanopore technology involves passing a biomolecule through a nanopore, typically embedded in a membrane. The nanopore can be a natural protein pore, such as the alpha-hemolysin pore from bacteria, or a solid-state pore created using advanced nanofabrication techniques. As the biomolecule translocates through the nanopore, it causes changes in the electrical current passing through the pore. These changes in current are used to infer information about the biomolecule's

Herbal Components as an Advantageous Remedy for Pimple and Acne in Face-Wash: mini Review

Somesh Shukla, Divya Dwivedi, Archana Sah, Ashrit Kumar, Ayush Gupta, Divyanshu Pandey, Neelam Jain, Neeraj Jain, Raghavendra Kumar Dwivedi

[1]Sakshi College of Pharmacy, Kanpur- 208017, U.P., India.
[2]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India
[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

ABSTRACT-

Herbal formulations are in high demand on the global market. The human epidermis is the most vulnerable organ in the body to infections and disease-causing microbes. It also acts as the majorly responsible body part for respiration. As a result, it needs a great deal of care and protection. Many skin issues can occur throughout puberty due to internal component imbalances and hormone imbalances. The most prevalent skin condition is acne. The most commonly afflicted areas are the face and neck. The removal of oil from the face is a preventative measure. This will need proper cleaning and washing. Antibiotic gels and anti-acne washes or masks containing synthetic medicines are presently available on the market. Unfortunately, in addition to treating illnesses and killing infections, these medicines may have adverse effects. Various studies have demonstrated the effectiveness of herbal-based compositions for cleansing and oil removal. As a result of this necessity, we came up with the notion of using herbs and various plant derived components markedly useful in the various treatments of skin-related conditions. The characteristics of various face wash and their efficacy are reviewed in the current study comprehensively. The main objective of this study is the comparison of Ingredients used in various formulations of face wash like Neem, Aloe vera, Belpatra, Curry, Haldi, Lemon, Indian madder, Sweet flag, Lodhra, Gelling agent, Preservative, Neutralizer, Humectants, Vehicle, Perfume, Chelating agent, on the basis of evaluation and effective development of emerging techniques used in the markedly available face wash which reportedly proven as an advantageous measure of treatment.

Key words: Facewash, Herbal formulations, Anti-acne, Anti-inflammatory, Anti-microbial.
DOI Number: 10.48047/Nq.2022.20.17.Nq880304 **Neuroquantology 2022; 20(17):2381-2386**

INTRODUCTION

Skin: The skin is the largest organ in the body, weighing approximately 15% of an adult. It prevents excess water loss from the body and plays a crucial role in thermoregulation, in addition to protecting against external, physical, chemical, and biological threats. Aside from adjusted nourishment, hormonal changes particularly during pubescence in the two genders cause many changes in the body. Among different changes, dryness, harshness, and pimples are the most widely recognized. The pathogenesis of this is bacterial abundance and irritation. To conquer this issue the utilization of natural cures, for example, aloe vera, neem, and tulsi frothing face wash gel have been planned (1, 2).

Skin care preparations: Over the years, the preparations for skin care have grown tremendously. In the hope of developing a charming personality, safeguarding their

Brain targeting approach for the treatment of Hypertension by using niosomal hydrogel of metoprolol succinate

Raghavendra Kumar Dwivedi, Divya Dwivedi, Aditya Raj Gupta, Rishabh Shukla, Ashish Pal, Neelam Jain, Neeraj Jain, Somesh Shukla, Jay Kumar

[1]Sakshi College of Pharmacy, Kanpur- 208017, U.P., India.
[2] *Advance Institute of Biotech and Paramedical Sciences, Kanpur- 208016,* U.P., India.
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India
[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.
[6]*School of Pharmaceutical Sciences, CSJM UNIVERSITY KANPUR*-208012, U.P., India.

Abstract-

Hypertension is incredibly common in adults. High blood pressure is a leading cause of cardiovascular disease and death, even though it is not a disease in and of itself. Niosomes are considered superior among these carriers. Niosomes are structurally comparable to liposomes and exhibit equivalent efficacy in drug delivery. However, their greater chemical stability and cost-effectiveness make them a more advantageous choice over liposomes. Both niosomes and liposomes are composed of a bilayer structure, with niosomes consisting of a non-ionic surfactant and liposomes consisting of phospholipids.

The niosomes were optimized by a factor of 32, and each formulation was divided by a factor of 22 to make hydrogels containing 1% w/v and 1.5% w/v chitosan. For example, if formulation F1 is used, it will be divided into two parts: F1Z1 and F2Z2, containing 1% w/v and 1.5% w/v chitosan, respectively. The optimized formulation, F1Z2, has a particle size of 342.9mm. The transmission electron microscopy (TEM) pictures of the optimized formulation revealed the presence of niosome vesicles in the formed sample. When the surfactant and cholesterol were taken in the same ratio, a higher percentage of encapsulation efficiency (%EE) was observed. However, increasing the amount of surfactant resulted in a drop in EE.

The optimized formulation achieved a maximum entrapment efficiency of 89.4%. An 8-hour in-vitro release study was conducted, and the results indicate the maximum release. The drug release experiments for the produced formulations were conducted over a duration of 8 hours, and the highest observed release was 81.157%. The improved formulation F1Z2 had a Zeta potential value of -22.4 mV, indicating the system's stability. The stability study is conducted in accordance with the ICH recommendations. Three optimal formulations were chosen based on their entrapment efficiency. The parameters were meticulously upheld for the stability analysis. The stability investigation of all the formulations yielded positive results, indicating their stability.

Keywords: Metoprolol succinate, Chitosan, Cholesterol, Antihypertensive Therapy, Niosomes.

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A Review on: A promising approach towards the treatment of acne with the natural agents

Raghavendra Kumar Dwivedi, Divya Dwivedi, Aditya Raj Gupta, Rishabh Shukla, Ashish Pal, Neelam Jain, Neeraj Jain, Somesh Shukla

[1]Sakshi College of Pharmacy, Kanpur- 208017, U.P., India.
[2] *Advance Institute of Biotech and Paramedical Sciences, Kanpur- 208016,* U.P., India.
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India
[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[5]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

ABSTRACT

Herbal remedies have been used throughout human history to treat a variety of infectious disorders. Acne vulgaris affects about 85% of American adults, especially among the youth. Acne lesions can be caused by a combination of environmental and hereditary causes, therefore it tends to run in families. Inflammatory lesions can take several forms, including pustules, nodules, cysts, and papules. The biggest concentration of pilosebaceous units is seen on the face, neck, upper chest, shoulders, and back, which is why these areas tend to experience acne more frequently. Meliaceae member Azadirachta indica produces oil with antimicrobial, anti-inflammatory, and immune-enhancing properties. This helps maintain healthy skin and is an adjunct to topical acne treatments by preventing recurrence. While certain oils are pore-clogging and non-comedogenic, others are effective against acne and can even stop it in its tracks. In this study we discuss about the herbal drug with act as an anti-acne agents.

Keywords: Papaya, Alovera, Neem, Fenugreek, Anti- acne agent.
DOI Number: 10.48047/NQ.2022.20.13.NQ88523 Neuroquantology 2022; 20(13):4295-4304

1.1 Acne –

Whether it develops in childhood or later in life, acne is an inherited or acquired disorder of the pilosebaceous units, from the Greek word "Akme" (peak or apex). In medical terms, acne is known as Acne vulgaris. Seventy percent to eighty percent of affected patients are between the ages of 11 and 25. Lesions of the pilosebaceous unit (hair follicles and/or sebaceous glands) can be both inflammatory and non-inflammatory, and both types are present in acne vulgaris. While some acne is to be expected during adolescence, severe acne can be unpleasant and, in many cases, leave scars even after therapy. Open comedones (blackheads) and closed comedones (whiteheads) are two types of non-inflammatory lesions. Papules, pustules, cysts, and nodules are all types of inflammatory lesions. Acne occurs more frequently on the face, neck, upper chest, shoulders, and back because these areas have the highest concentration of pilosebaceous units. **Daud F.S. et al. [6]; Sawarkar H.A. et al. [14]; Chambers et al. [4]; David et al. [7]; Pratik B. et al. [2]**

Evaluation of Dipivefrin Hydrochloride Entrapped Non-Ionic Surfactant Based Gels for The Treatment of Ocular Disease

Neeraj Jain, Anurag Verma, Vaibhav Rastogi, Neelam Jain, Arpita Chaudhary
Research Scholar, Teerthanker Mahaveer College of Pharmacy, TMU, Moradabad-244001, U.P., India
Teerthanker Mahaveer College of Pharmacy, TMU, Moradabad-244001, U.P., India
Faculty of Pharmacy, Oriental University, Indore-452010, M.P., India
Faculty of Pharmaceutical sciences Rama University, Kanpur-209217, U.P., India.

ABSTRACT

The present study was aimed on developing and characterizing niosomal gels loaded with adrenergic agonist; dipivefrin HCl for prolonging precorneal residence time and improving bioavailability of drug for glaucoma treatment. Dipivefrin HCl niosomes were prepared using various non-ionic surfactants (span 20, span 60 and span 80) in the presence of cholesterol in different molar ratios by ether injection method. The selected formulations were incorporated into carbopol 934 and locust bean gum-based gels. TEM studies confirmed that niosomes formed were white and spherical in shape and have a definite internal aqueous space with uniform particle size. Formulation F4 composed of span 60 and cholesterol (1:1) gave the highest entrapment (92.16±0.25%) and slower release results after 8 hours (Q8h=61.05±2.87%) among other formulations. The in-vitro drug permeation studies showed that there was a slow and prolonged release of drug from niosomal gel formulations as compared to niosomes itself. Considering the in-vitro release, niosomal gel formulation G2 were the best among the studied formulations. No sign of redness, inflammation, swelling or increased tear production was observed by Draize test. The IOP lowering activity of selected formulation was detected and compared with marketed Pilopine HS® gel. G2 formulation showed relative bioavailability 2.64 times more than bioavailability of marketed Pilopine HS® gel.

Keywords: Niosomes, Dipivefrin HCl, Niosomal gel, Draize test, IOP, antiglaucomatic activity.
DOI Number: 10.48047/NQ.2022.20.13.NQ88524 **Neuroquantology 2022; 20(13):4305-4313**

INTRODUCTION

Glaucoma is a prevalent neurodegenerative disorder of the eye. Increased intraocular pressure (IOP) and subsequent retinal ganglion cell (RGC) death leading to the loss of visual field characterizes the pathology of primary open angle glaucoma (POAG), which is the most common form. The disease affects over 66 million people worldwide, causing bilateral blindness in 6.8 million (1, 2). Patients with POAG typically exhibit increased resistance to the outflow of aqueous humor through the trabecular meshwork, which can result in an increase in IOP and subsequent cell death from compression of the optic nerve axons (3). However, IOP is the primary risk factor causing the loss of RGCs; the strategies of treatment mostly involve lowering IOP (4). Current treatment options primarily aim at decreasing IOP by utilizing pharmacological agents, laser

Determination of Na^+ and K^+ by Flame Photometer from Citrus fruits and their Antioxidant Capacity

Surendra Pardhi, Neeraj Jain, Neelam Jain, Laxmi Mishra

[*1]Dept of Pharma Sciences, Sardar Patel University, Balaghat-481001, M.P., India
[2]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[3]Faculty of Pharmacy, Oriental University, Indore-453555, M.P., India.
[4]Faculty of Pharmaceutical sciences Rama University, Kanpur-209217, U.P., India.

ABSTRACT

Photoelectric flame photometry, a branch of atomic spectroscopy is used for inorganic chemical analysis for determining the concentration of certain metal ions such as sodium, potassium, lithium, calcium, Caesium, etc. Sodium (Na) is the major extracellular cation and it plays a role in body fluid distribution. Concentration of sodium ions inside the plasma (extracellular) is 130-145 mmol/l. Higher and lower concentrations are referred to as hypernatremia and hyponatremia, respectively Potassium (K) is the major cation found inside of cells. The proper level of potassium is essential for normal cell function. An abnormal increase of potassium (hypercalcemia) or decrease of potassium (hypokalemia) can profoundly affect the nervous system and heart, and when extreme, can be fatal. The normal blood potassium level is 3.5- 5.0 millimoles/litter (mmol/l). simultaneously conducting research on citrus fruits here would be progressive results on its antioxidant studies. by doing this research on the extracts of this fruit it can use to future drug discovery and essential metabolites with antioxidant effects and drugs for antimicrobial, anti-inflammatory and antioxidant, etc. Conclusion of this work the proposed flame photometric method was successfully employed to estimate the amount of potassium and Sodium in five different citrus fruits (lemon, orange, pink grapefruit, lime, and pomelos). The proposed method was found to be simple, specific, accurate and precise. This study provided yielded results to compare mineral (Na and K) content of different fruits. Shows good antioxidant activity

Key words: Photoelectric flame photometry, citrus fruit, Na and K.

DOI Number:10.48047/nq.2022.09.nq44915 **NeuroQuantology 2022;20(9):7879-7887**

INTRODUCTION

Citrus plants belonging to the family *Rutaceae* which include fruits such as lemon, orange, mandarin, lime, sour orange, and grapefruit appear as a well-known promising source of different useful nutrients for human beings. Citrus fruits are one of the world's most important beneficial fruit crops and are known for their nutritive values and special aroma [1, 2, 6]. Citrus is mainly consumed as fresh fruit or juice. the citrus [11] fruits have high potentially represented a rich source of phenolic compounds and dietary fibers and these fruits had good antioxidant activity agents [3-10]. These citrus fruit residues, which are generally discarded as waste in the environment, can act as potential nutraceutical resources. Citrus fruits are good sources of nutrition with a rich amount of vitamin C. Besides, the fruits are abundant in other macronutrients, including sugars, potassium, sodium folate, calcium, thiamin, niacin, vitamin B6, phosphorus, magnesium, copper, riboflavin and pantothenic acid. Citrus fruits contain several secondary metabolites, such as flavonoids, alkaloids, coumarins, limonoids, carotenoids, phenol acids, and essential oils. These active secondary metabolites show several bioactivities of vital importance to human health, including anti-oxidative, anti-inflammatory, anti-cancer, as well as cardiovascular protective effects, neuroprotective effects, etc. In addition, Citrus fruits have been used as traditional

Advancements in Diabetes Mellitus Treatment: Overcoming Limitations through Innovative Therapeutic Approaches

Jagat Pal Yadav, Shubhrat Maheshwari, Ajeet Kumar, Alka, Neeraj Jain, Neelam Jain, Somesh Shukla
Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.
Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India
Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
Faculty of Pharmacy, Oriental University, Indore, M.P, India.
Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

Abstract:

Diabetes mellitus (DM) arises from metabolic dysregulation characterized by insufficient insulin release and increased insulin resistance. This condition precipitates various systemic complications, including nephropathy, retinopathy, and cardiovascular disease. DM is broadly classified into type I and type II, with insulin replacement being central to type I DM management, while oral hypoglycemic agents are typically used for type II DM. Treatment strategies for type II DM encompass insulin secretagogues, biguanides, insulin sensitizers, alpha-glucosidase inhibitors, incretin mimetics, amylin analogs, and sodium-glucose cotransporter 2 (SGLT2) inhibitors. In cases where primary oral hypoglycemic agents fail to achieve therapeutic goals, specialists often recommend dual therapy to enhance efficacy. However, conventional treatment regimens are hindered by variable bioavailability and short half-lives, necessitating frequent dosing and potentially limiting therapeutic efficacy. Given the complex nature of DM, nanotechnology-based approaches hold promise, offering advantages such as targeted drug delivery, improved bioavailability, and reduced dosing frequency.

Keywords: GLP-1, DPP- 4, incretin, Roux-en-Y, insulin, Kissei Phrmaceuticals.
DOI Number:10.48047/nq.2022.09.nq44916 **NeuroQuantology 2022;20(9):7888-7903**

Introduction

Diabetes mellitus (DM) is an important medical condition that affects over 400 million people [1]. This metabolic condition continually led to long-lasting risky complications, both microvascular and neuropathic. DM is either affected by a lack of insulin discharge, due to pancreatic β-cell damage or insulin obstruction that is known as insulin non-use. The relentless ascent of the sum of diabetic patients world-wide which is needed to reach 366 million by 2030 in the people of the old (>65 years) could be an important reason for a stationary way of life [2]. Nephropathy, neuropathy, vascular and renal disorders, retinopathy, dietary complications, etc., all have various DM-related complexities.

The 2 kinds of DM are Type 1 DM and Type 2 DM. Type 1 DM is an immune system issue and affects pancreatic cells that decreases or

Neolamarckia cadamba: A Comprehensive Review of Its Botanical, Ethnobotanical, Phytochemical, and Industrial Significance

Jagat Pal Yadav, Shubhrat Maheshwari, Ajeet Kumar[3], Alka, Neeraj Jain, Neelam Jain, Abhishek Kumar

[1]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.
[2] Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
[3] Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India
[5] Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[6] Faculty of Pharmacy, Oriental University, Indore, M.P, India.
[7] Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

Abstract

Neolamarckia cadamba, commonly known as the kadam tree, is a significant species within the Rubiaceae family, revered for its diverse applications and economic importance. This review offers an extensive examination of *N. cadamba*, delving into its botanical characteristics, geographical distribution, and ecological significance. It explores the tree's ethnobotanical uses, emphasizing its long-standing role in traditional medicine across various cultures. The phytochemical profile of *N. cadamba* is detailed, highlighting the bioactive compounds responsible for its numerous pharmacological properties, including anti-inflammatory, antimicrobial, and antioxidant effects. Additionally, the review addresses the tree's potential industrial applications, such as its use in timber, paper production, and agroforestry systems. By underscoring the kadam tree's medicinal properties and environmental benefits, this comprehensive review aims to consolidate current knowledge and underscore the tree's versatility and significant contributions to both traditional practices and modern industries.

Keywords: *Neolamarckia Cadamba,* antioxidant, phytochemistry, pharmacology, Ayurvedic.

DOI Number: 10.48047/nq.2022.20.8.nq221163 NeuroQuantology 2022; 20(8): 11281-11286

Introduction

Neolamarckia cadamba, also known by its synonym *Anthocephalus cadamba* and commonly referred to as Kadamba, is a significant tropical tree indigenous to the lush forests of South and Southeast Asia, belonging to the Rubiaceae family [1,2]. This tree, reaching heights of up to 45 meters, is noted for its straight trunk, broad crown, and large glossy leaves, as well as its spherical, fragrant, golden-yellow inflorescences that bloom during the monsoon season. Kadamba is deeply embedded in traditional medicine, with various parts of the tree—such as the bark, leaves, flowers, and fruit—utilized in Ayurvedic and other medicinal systems for their analgesic [3], anti-inflammatory [3], antimicrobial, antioxidant [4], antidiabetic [5], Alzheimer and

Versatile Properties and Biological Significance of Imidazole and Its Derivatives: A Comprehensive Mini Overview

Jagat Pal Yadav, Shubhrat Maheshwari, Ajeet Kumar[3], Alka, Neeraj Jain, Neelam Jain, Shailendra Singh Bhadauriya

[1]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.
[2] Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
[3] Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India
[5] Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[6] Faculty of Pharmacy, Oriental University, Indore, M.P, India.
[7] Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

Abstract:

Imidazole holds a distinctive role in heterocyclic chemistry, garnering significant interest due to its diverse properties in both chemistry and pharmacology. This nitrogen-containing heterocyclic ring, characterized by the formula C3N2H4, stands as a pivotal organic compound. Its structure comprises a five-membered heterocyclic aromatic ring with two sp2 hybridized nitrogen atoms. The derivatives of imidazole have captured attention in recent years owing to their versatile nature in various fields, particularly in biology and pharmacology. Imidazole exhibits a spectrum of biological activities, ranging from antimicrobial and anti-tuberculosis properties to antihypertensive, antioxidant, anti-inflammatory, anticonvulsant, antidepressant, anticancer, and antifungal effects. Notably, imidazole demonstrates amphoteric behavior, functioning both as an acid and a base. It is classified within the azoles group, alongside compounds like ketoconazole, miconazole, and clotrimazole. Furthermore, within the azoles category, there exist triazoles such as fluconazole, itraconazole, and voriconazole, highlighting the broader classification within which imidazole resides.

Keywords: Imidazole, Antimicrobial, Antifungal, Aromatic compound.

DOI Number: 10.48047/nq.2022.20.8.nq221164 NeuroQuantology 2022; 20(8): 11287-11190

Introduction: Imidazole is an organic compound with the molecular structure see Fig. 1 and formula $C_3N_2H_4$. It is five-member heterocyclic aromatic compound with two nitrogen atoms. Both Nitrogen atoms are sp2 hybridized [1-3]. The Imidazole ring is a constituent of several important natural Products, including purine, histamine, Histidine and nucleic acid. Being a polar and ionisable aromatic compound, it improves pharmacokinetic characteristics of lead molecules and thus used as a remedy to optimize solubility and bioavailability parameters of proposed poorly soluble lead molecules. Imidazole derivatives have occupied a unique place in the field of medicinal chemistry [4]. Numerous methods for the synthesis of Imidazole and also their various structure reactions offer enormous scope in the field of medicinal chemistry [4].

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Exploring Herbal Alternatives for Asthma Management: Pharmacological Insights and Ethnobotanical Perspectives

Jagat Pal Yadav, Shubhrat Maheshwari, Ajeet Kumar, Alka, Neeraj Jain, Neelam Jain, Abhishek Kumar

[1]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.

[2] Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.

[3] Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India

[5] Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.

[6] Faculty of Pharmacy, Oriental University, Indore, M.P, India.

[7] Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

Abstract:

Many plants have been documented in traditional medical systems to be useful in the treatment of various respiratory disorders, including asthma. The use of medicinal plants and natural products has increased dramatically over the last two decades all over the world. The current synthetic drugs used in asthma pharmacotherapy are unable to act at all stages and targets of asthma. However, some herbal alternatives used in asthma have been shown to provide symptomatic relief as well as aid in the prevention of disease progression. In the treatment of asthma, the herbs have shown promising results in bronchodilation, mast cell stabilization, anti-anaphylactic, anti-inflammatory, anti-spasmodic, anti-allergic, immunomodulatory, and inhibition of mediators such as leukotrienes, lipoxygenase, cyclooxygenase, platelet activating, phosphodiesterase, and cytokine. This paper attempts to categories these pharmacological and clinical findings based on their reported mechanism of action. Many asthmatics use herbal medications to alleviate symptoms and improve asthma control. The goal of this study was to update the systematic review and meta-analysis of randomized controlled trials of herbal medicine in adults with asthma. Nigeria has a long history of plant-based healthcare knowledge. Various tribes and folklore traditions in Nigeria use a wide range of plants/plant extracts, juices, or pastes to treat asthma. Thus, the current review attempts to analyses the ethno-botanical/ethno-pharmacological knowledge-base for managing asthma in the country from literature, which includes the use of plants, methods used, and prevalent folklore practices.

Keywords: Asthma, inflammation, medicinal plants, herbal medicines, ethno-pharma

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Introduction

The term "asthma" derives from the Greek word for "hard breathing." The Global Initiative for Asthma was established to raise asthma awareness among health professionals, public health officials, and the general public in order to improve prevention and management through a cooperative global effort [1, 5]. Asthma is a chronic inflammatory condition characterized by hyper responsive airways to a variety of stimuli, most of which are allergic in nature, and reversible airflow limitation.

Harnessing the Power of Plant Phytoconstituents for Pancreatic Cancer Treatment

Jagat Pal Yadav, Shubhrat Maheshwari, Ajeet Kumar, Alka, Neeraj Jain, Neelam Jain, Abhishek Kumar

[1]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.
[2] Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
[3] Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
[4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India
[5] Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[6] Faculty of Pharmacy, Oriental University, Indore, M.P, India.
[7] Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India

Abstract:

Pancreatic ductal adenocarcinoma (PDAC) is one of the leading causes of death worldwide. Predominantly affecting the geriatric population, it is rarely found in younger individuals and has a poor prognosis. Treating PDAC is particularly challenging due to the difficulty in detecting symptoms at early stages. Numerous risk factors contribute to cancer progression, and the complex microenvironment of PDAC further complicates treatment. A significant concern is the high relapse rate following therapy. Ongoing research continually seeks effective treatments for this stubborn cancer. This paper discusses the potential of herbal medicines and highlights the critical role scientists play in managing and treating PDAC.

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Introduction

Pancreatic ductal adenocarcinoma (PDAC) stands as the predominant epithelial and exocrine malignancy within the pancreas, constituting over 80% of pancreatic emalignant neoplasms [1]. A majority of instances, exceeding 80%, are identified in individuals aged between 60 and 80 yars [2,3]. The condition is infrequent among individuals below the age of 25 and is comparatively rare in those under 45 years old [4]. Most cases are diagnosed at late tumor stages when curative surgical treatment is no longer feasible [5]. Pancreatic cancer typically remains asymptomatic in its early stages, and if symptoms do manifest, they are generally nonspecific, such as unexplained weight loss, epigastric pain radiating to the back, stool irregularities, or nausea. The initial clear clinical indication often arises in the form of painless jaundice, resulting from the tumor compressing the bile duct. Consequently, at the time of presentation, approximately 50–60% of patients already have metastases to other organs, primarily the liver and lungs. In such cases, only palliative treatment is feasible, and despite the

A DIFFERENT PERSPECTIVE FOR DIFFERENT DISEASES: MICROSPONGES

Somesh Shukla, Abhishek Kumar, Shailendra Singh Bhadauria, Shubhrat Maheshwari, Jagat Pal Yadav, Aditya Singh, Ajeet Kumar[5], Neeraj Jain, Neelam Jain

[1] Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India.
[2] Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
[3] Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.
[4] Faculty of Pharmacy, Integral University, Lucknow, 226026, India.
[5] Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
[6] Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[7] Faculty of Pharmacy, Oriental University, Indore, M.P, India.

Abstract:

The Pharma industry has demonstrated a lot of interest in micro particulate medication delivery technologies. They make it possible to improve medicine therapeutic effectiveness while lowering adverse effects. In this aspect, microsponges are a novel type of porous polymer microsphere that allows a broad range of active substances to be entrapped. The description of the system is required throughout the development, and one of the most significant tests is the release and penetrability profile evaluation. They can show how a medicine behaves in a given location under certain application conditions and are linked to therapeutic effectiveness. In this paper, the methods for determining in vitro drug release study investigations are described in detail. Instances of delivery of drugs from microsponges supplied at various places are also explored to better understand how this method might be used to adjust medication administration.

Keyword: Microsponges, Microsponge dosage form, Resiliency drug delivery system.

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Introduction:

In concerns, the human body is an essential focal region for medication administration. Topical medication administration is an effective way to limit the therapeutic impact on the afflicted area while reducing systemic adverse effects in the treatment of fungal infections. The stratum corneum (SC), the skin's topmost layer, serves as a deterrent to exogenous substances such as medicines. This inherent property of the stratum corneum presents a substantial challenge to researchers, and yet this obstacle must be eliminated in terms of providing a medically appropriate amount of drug in people with different skin layers [1].

The majority of traditional dosage forms, such as tablets, capsules, creams, lotions, and gels with quick release, are crude and has a slew of flaws, including low bioavailability, skin and gastrointestinal irritation, unpleasant reactions, and toxic effects of the active ingredients. As a result, modified drug release technology is one of the most significant fields of Pharmaceutical

Neurotrophic Factor Signaling in Neurological Disorders: Implications for Disease Pathogenesis and Therapy

Shubhrat Maheshwari, Aditya Singh, Jagat Pal Yadav, Abhishek Kumar, Ajeet Kumar, Alka, Neeraj Jain, Neelam Jain

[1] Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
[2] Faculty of Pharmacy, Integral University, Lucknow, 226026, India.
[3] Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.
[4] Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India.
[5] Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
[6 4]Amity Institute of Pharmacy, Amity University, Lucknow campus, Uttar Pradesh, India
[7]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[8] Faculty of Pharmacy, Oriental University, Indore, M.P, India.

Abstract

Neurotrophic factors play pivotal roles in the development, maintenance, and repair of the nervous system. Dysregulation of neurotrophic factor signaling pathways has been implicated in various neurological disorders, ranging from neurodegenerative diseases to psychiatric disorders. This review article aims to provide a comprehensive overview of the involvement of neurotrophic factor signaling in the pathogenesis of neurological disorders and its therapeutic implications. The review discussed the roles of key neurotrophic factors, including nerve growth factor (NGF), brain-derived neurotrophic factor (BDNF), glial cell line-derived neurotrophic factor (GDNF), and neurotrophin-3 (NT-3), in neuronal survival, differentiation, and synaptic plasticity. It explores how alterations in the expression and function of these factors contribute to the pathophysiology of diseases such as Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis, and mood disorders. Therapeutic strategies targeting neurotrophic factor signaling for the treatment of neurological disorders. It discusses various approaches, including the administration of exogenous neurotrophic factors, small molecule agonists, gene therapy, and stem cell-based therapies. Furthermore, it highlights recent advancements in the development of novel neurotrophic factor-based therapeutics and their potential for clinical translation. The significance of neurotrophic factor signaling in neurological disorders and emphasizes the therapeutic potential of targeting these pathways for disease intervention. Understanding the intricate mechanisms underlying neurotrophic factor dysregulation offers new avenues for the development of effective treatments aimed at preserving neuronal function and ameliorating the progression of neurological diseases.

Keywords: Neurotrophic factors, Neurotrophins, Nerve Growth Factor, Neurological Disorder, Trk Receptor,

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Liposomal Drug Delivery for Brain Tumor Therapy: Challenges and Opportunities

Shubhrat Maheshwari, Aditya Singh, Jagat Pal Yadav, Abhishek Kumar, Somesh Shukla, Akhilesh Kumar, Neeraj Jain, Neelam Jain

[1]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India.
[2]Faculty of Pharmacy, Integral University, Lucknow, 226026, India.
[3]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh 228118, India.
[4] Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India.
[5] CIMAP Picnic Spot Road, near Kukrail, Lucknow, Uttar Pradesh 226015, India.
[6]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[7] Faculty of Pharmacy, Oriental University, Indore, M.P, India.

Abstract

Liposomal drug delivery systems have emerged as promising platforms for the targeted treatment of brain tumors, offering the potential to achieve significant therapeutic efficacy with minimal systemic side effects. In this review, we provide an overview of the application of liposomes in brain tumor therapy, highlighting their advantageous characteristics, including the ability to encapsulate both hydrophobic and hydrophilic drugs, biodegradability, biocompatibility, and tumor-targeting capabilities. Through the incorporation of site-specific ligands, liposomes enable active targeting of brain tumor tissues, resulting in localized drug release and minimizing adverse effects on healthy tissues. Despite their promising preclinical results, the clinical translation of liposomal-based therapies faces several challenges, including overcoming the blood-brain barrier, ensuring physical and chemical stability, large-scale production, reproducibility, regulatory standards, and safety evaluation. Addressing these challenges is crucial for the successful clinical translation of liposomal formulations for brain tumor therapy. Future research efforts should focus on optimizing liposomal formulations, refining manufacturing processes, establishing regulatory standards, and conducting comprehensive safety evaluations to facilitate their clinical adoption. Collaborative efforts between researchers, clinicians, regulatory agencies, and industry partners are essential to realize the potential of liposomes as effective drug delivery systems for brain tumor therapy, offering hope for improved outcomes and quality of life for patients facing this devastating disease.

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Introduction

Cancer is a malignant disease that affects human health and is now the second leading cause of death worldwide. The challenge in cancer therapy is not only to find a drug that is toxic to cancer cells but also to find one that can selectively kill cancer cells while preserving the functions of normal cells. Currently, three main traditional treatment modalities are used in clinical practice: chemotherapy, radiotherapy, and surgery. However, the limitations of conventional cancer treatments have motivated the development of various nanotechnologies for more effective and safer

Advancing Liposomal Drug Delivery in Alzheimer's disease: Current Insights and Future Perspectives

Shubhrat Maheshwari, Aditya Singh, Jagat Pal Yadav, Shailendra Singh Bhadauria, Somesh Shukla, Ajeet Kumar, Neeraj Jain, Neelam Jain

[1]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh , 227405, India.
[2]Faculty of Pharmacy, Integral University, Lucknow, 226026, India.
[3]Department of Pharmacology, Kamla Nehru Institute of Management and Technology, Faridipur, Sultanpur, Uttar Pradesh, 228118, India.
[4]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India.
[5]Faculty of Pharmacy, Future Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.
[6]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[7]Faculty of Pharmacy, Oriental University, Indore, M.P, India.

Abstract

Alzheimer's disease (AD) presents a formidable challenge in modern medicine, necessitating innovative approaches for effective treatment. Liposomal drug delivery systems have emerged as promising candidates for targeted therapy in AD due to their ability to overcome biological barriers and deliver therapeutics specifically to the brain. This review provides a comprehensive overview of the current state and future directions of liposomal drug delivery in AD treatment. We discuss the advantageous characteristics of liposomes, including their biocompatibility, versatility in encapsulating various drugs, and potential for targeted drug delivery. Additionally, we highlight recent advances in liposomal formulations designed to target amyloid-beta plaques and neurofibrillary tangles, two hallmark pathologies of AD. Despite the promising potential of liposomal drug delivery, challenges such as optimizing stability, scaling up production, and ensuring regulatory approval remain. We also discuss ongoing efforts to address these challenges and provide insights into future directions for the development of liposomal-based therapies for AD. Overall, liposomal drug delivery systems hold great promise for revolutionizing the treatment landscape of Alzheimer's disease, offering hope for improved therapeutic outcomes and quality of life for patients.

Keywords: Liposomes, Alzheimer's disease, FDA- approved, Targeting, enhanced permeability
DOINumber: 10.48047/nq.2022.20.4.nq22405 **NeuroQuantology2022;20(4):1688-1697**

Introduction

Alzheimer's disease (AD) represents a significant challenge in modern healthcare due to its devastating impact on cognitive function and quality of life. It is the most common cause of dementia, accounting for approximately 60-80% of cases worldwide. The disease is characterized by progressive neuronal degeneration, leading to cognitive decline, memory loss, and impairment in daily functioning. Despite decades of research, effective treatments for AD remain elusive, with currently available medications providing only symptomatic relief

STUDY OF NANO-RIFABUTIN LOADED GLUCAN PARTICLE IN MYCOBACTERIAL TUBERCLOSIS

Aditya Singh, Shubhrat Maheshwari, Somesh Shukla[3], Abhishek Kumar, Neeraj Jain, Neelam Jain

[1]Faculty of Pharmacy, Integral University, Lucknow, 226026, India
[2]Rajarshi Rananjay Sinh College of Pharmacy, Amethi, Uttar Pradesh 227405, India
[3]Faculty of Pharmaceutical Sciences, Rama University, Kanpur, 209217, India
[4]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad- 244001, U.P., India.
[5]Faculty of Pharmacy, Oriental University, Indore, M.P, India.

Abstract

Tuberculosis (TB) is a disease caused by bacteria which spread by Mycobacterium tuberculosis from individual to person through the air and contains at least 9 small RNA families in their genome. TB incidence is 2.96 per 100,000 populations for a total of 9,421 recorded cases (2014). Across all cultural cases, multi-drug-resistant were 1.3 percent. TB is a regional pandemic in six Asian countries, Bangladesh, China, India, Indonesia, Pakistan and the Philippines, in 13 of the most recorded countries of tuberculosis, while a half of these are new cases in 6 Asian countries. TB is diagnosed by Positive skin screen (TST) for Tuberculin, Acid fast bacilli, test X-ray etc. One third of the world's population is believed to be contaminated with M. Tuberculosis and infection with latent TB Patients with suspected TB should be deemed contagious if lung, airway or laryngeal TB is suspected. Recently the WHO has suggested that all people with HIV infections with latent TB infection should be given TB chemoprophylaxis in resource-contracted environments. The only vaccine approved to prevent TB is live-atténuated BCG, established in 1908. The efficacy has not been consistent with pulmonary tuberculosis, varying from 0-80%. BCG defends against transmission infancy tuberculosis and tuberculosis. The WHO therefore actually recommends that all children in areas where TB is prevalent should receive the BCG vaccine intradermally following childbirth.

Keywords: Tuberculosis, attenuated, nanoparticles, glucan, Rifabutin.
DOINumber: 10.48047/nq.2022.20.4.nq22406 **NeuroQuantology2022;20(4):1698-1704**

Introduction

Tuberculosis is a lethal disease caused by the optional mycobacterium tuberculosis intracellular pathogen [1]. Very few anti-TB drugs, including the latest drugs, Bedaquiline and Delamanide that can be used for TDR-TB, were approved for human use in the past decades [2], both reported for the development of resistance [3]. Rifabutin is a common name used to treat mycobacterium tuberculosis in HIV-populations, but if you use deliveridine or vericonazole, you do not take rifabutin. Neutripenia and urinary discoloration are widely recorded [4]. 342 drugs, 122 major drugs, 190 moderate and 31 minor ones, are known to interact with rifabutin [5]. Rifabutin interact with drugs such as aspirin, Ativan, Isoniazide, Fluconazole, Ascorbic acid, Ritonavier, Ciprofloxacin, Sulphomethoxazole, Atrovazitrin. Rifabutin 150 mg brown capsule and National Drug Code 681 80-0285 were made by Lupin Pharmaceutical [6]. Stomach

RES MILITARIS Social Science Journal

Niosomal Drug Delivery System for Ocular Drug Delivery

Neeraj Jain*, Anurag Verma[1], Vaibhav Rastogi[1] Neelam Jain[2], Ajeet Kumar[3]

[*1]Teerthankar Mahaveer College of Pharmacy, TMU, Moradabad-244102, Uttar Pradesh, India

[2]Faculty of Pharmacy, Oriental University, Indore-452003, Madhya Pradesh, India

[3]Faculty of Pharmaceutical sciences Rama University, Mandhana, Kanpur-209217, U.P., India.

ABSTRACT

The main purpose of the current study was to investigate the feasibility of niosomes as carriers for the ocular controlled delivery of a cholinergic drug; pilocarpine HCl. In the present study, pilocarpine HCl loaded niosomes were prepared using various non-ionic surfactants (span-20, span-60 and span-80), in the presence of cholesterol in different molar ratios by ether injection method. The ability of these vesicles to entrap the studied drug was determined by evaluating the entrapment efficiency after centrifugation and separation of the formed vesicles. Photomicroscopy and transmission electron microscopy as well as vesicle size analysis were used to study the formation, morphology and size of the drug loaded niosomes. The surface properties of prepared niosomes were determined by zeta potential. Fourier transform infrared spectroscopy and differential scanning colorimetry was done to investigate the drug-excipients compatibility and the chemical stability of drug after penetration into the niosomes. TEM analysis confirmed that niosomal formulations were spherical in shape and has a definite internal aqueous space. Results showed a substantial change in the release rate and an alteration in the drug entrapment efficiency from niosomal formulations upon varying type of surfactant and cholesterol content. *In vitro* drug release results confirmed that niosomal formulations have exhibited a high retention of pilocarpine HCl inside the vesicles such that their *in vitro* release was slower and more controlled. A formulation with 1:1 molar ratio of span-60 and cholesterol gave the most advantageous entrapment (93.26±1.75%) and release results after 8 hours (Q8h=66.98±1.87%) as compared to other compositions. These results confirm that niosomes containing formulations may be considered as promising ophthalmic carriers for the topical application of pilocarpine HCl.

KEYWORDS: Niosomes, Controlled release, Ocular delivery, Glaucoma, Ether injection technique.

INTRODUCTION

Glaucoma is a prevalent neurodegenerative disorder of the eye. Increased intraocular pressure (IOP) and subsequent retinal ganglion cell (RGC) death leading to the loss of visual field characterizes the pathology of primary open angle glaucoma (POAG), which is the most common form. The disease affects over 66 million people worldwide, causing bilateral blindness in 6.8 million [1]. Patients with POAG typically exhibit increased resistance to the outflow of aqueous humor through the trabecular meshwork, which can result in an increase in IOP and subsequent cell death from compression of the optic nerve axons [2]. However, IOP is the primary risk factor causing the loss of RGCs; the strategies of treatment mostly involve lowering IOP [3]. Current