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A REVIEW ON COSMECEUTICALS

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ABSTRACT

Cosmeceuticals are cosmetic-pharmaceutical combination products intended to improve the health and beauty of the skin, hair, and otherconditions,by providing a specific result, ranging from acne-control ,anti-wrinkle effects, sun protection, dandruff control, hair growth and conditioning.Cosmeceuticals have medicinal benefits which affect the biological functioning of skin depending upon type of functional ingredients they contain.Thecosmeceuticals are topical agents that are distributed across broad spectrum of materials, lying somewhere between pure cosmetics and pure drug .There are numerous herbs available naturally having different uses in cosmetic preparations for skincare, hair care and as antioxidants.This article focuses onimportance of cosmeceuticals, the herbs used in them and their advantages and limitations and challenges.

Keywords: Cosmeceuticals, Herbs, Cosmetics, Drug, Skincare, Hair Care.

I. INTRODUCTION

After the implementation of Food, Drug, and Cosmetic Act of 1938, the world of topical skin care products was divided into two groups: cosmetics and drugs. Drugs were for the treatment orprevention of diseases, and it was required that safety and efficacy be established before sales and marketing could proceed In discrepancy, cosmetics were viewed as agents to enhance the beauty of the skin or get better appearance of the skin, and safety and efficacity weren't needed to be demonstrated before deals and marketing of these products. At a fundamental level cosmetics are products which affect the appearance of the skin, while drugs affect the structure and function of the skin. Thus the term "cosmeceutical" is intended to describe skin care products that fall in between these categories. (1)

The term Cosmeceuticals was first used by Raymond Reed founding member of U.S Society of Cosmetics Chemist in 1961. He actually used the word to brief the active and wisdom grounded cosmetics. The above term was further used by Dr Albert Kligman in the year 1984 to refer the substances that have both cosmetic and therapeutic benefits[2]Tracingthe origin of cosmetics, the first recorded use of cosmetics isattributed to Egyptians, circa 4000 BC.

The Food, Drug, and Cosmetic Act defines cosmetics by their intended use, as 'article intended to be rubbed, poured, sprinkled, or scattered on, introduced into, or else applied to clean up the human body, beautifying, promoting attractiveness, or altering the appearance.3

Dr. Albert Klingman states that "The cosmeceuticals are topical agents distributed across a broad spectrum of materials lying somewhere among the pure cosmetics (lipsticks and rouges) and pure drugs (corticosteroids and antibiotics), they partake of both category". Cosmeceuticals improve the appearance, but they do so by delivering nutrients necessary for healthy skin and treats medically on impaired skin cells.

According to the United States Food and Drug Administration (FDA), the Food, Drugs, and Cosmetics Act; a product can be a drug, a cosmetic, or a combination of both, but the term "Cosmeceuticals" has no meaning under the law". So the term Cosmeceuticals isn't acknowledge by the Federal Food, Drug, and Cosmetic Act.

Use of cosmetics or beauty products will not cause the skin to change or heal; these products are just meant to cover and beautify. But a cosmeceutical product will have active ingredients which acts much lively to protect, heal and prevent damage to the skin.[4]

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Research Article

Open Access

Analytical Method Development and Validation of Trazadone Hydrochloride in Bulk and Solid Dosage Form Using Uv Spectrophotometer and Uhplc Method

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Abstract

A new simple, accurate, rapid and precise isocratic, (ultra-high performance liquid chromatography), (UHPLC) method was developed and validated for determination of trazodone in bulk drug and tablet dosage form .analytical tech UV detector and column with 100 mm x 4.6 mm i.d . And 2.5 µm particle size methanol's 60 with OPA (60: 40 v/v) PH were used as the mobile phase for the method. The detection wavelength was 249 mm and flow rate were 0.7ml/ min .in the developed method. The retention time of trazodone were found to be 4.641 min .the method was validated according to the regulatory guidelines with respect to specificity, precision, accuracy, linearity, and robustness, etc.

Keywords: Trazodone HCL; UHPLC; UV spectroscopy; Validation; Method development

Introduction

Trazodone, chemically designed as (2-3[4-(3-Chlorophenyl) piperazin -1-yl] propyl} 2h, 3h, -[1, 2, 4 triazolo [4, 3 - a] pyriclin -3 - one (fig: 1). category of anti- depressant [1]. (Figure 1) (Table 1)

According to the information collected from literature method the determination of trazodone HCL out of this method only one method is in UHPLC.

The determination of trazodone HCL in tablet dosage form we describe a simple accurate, sensitive and validated UHPLC method of trazodone with total run time 10 minutes for the determination of trazodone.

Materials and Methods

Standards Drugs

Trazodone HCL of purity 99% w/w procured from Zydus Cadila Health Care ltd. gift sample

Apparatus

The analysis of drugs was carried out on Agilent (110) software system UV detector. Equipped with reverse phase (Agilent) C18 column (4.6 id x 100 mm: 2.5 µm). A 20 µl injection loop and UV absorbance detector and running UV analyst software.

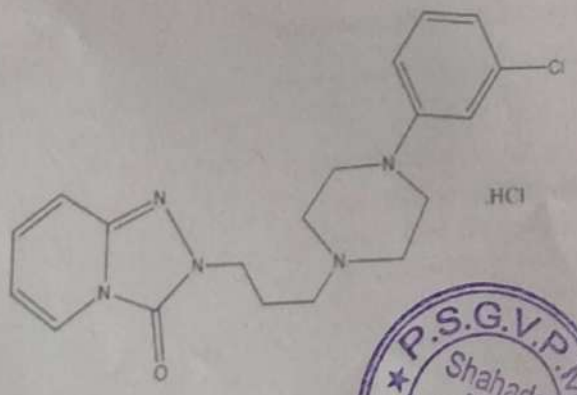

Figure 1: Chemical Structure of Trazodon

Preparations of Standard Solutions

Accurately weight and transfer 5mg Trazodone working standard into 10 ml volumetric flask as about diluent Methanol completely and make volume up to the mark with the same solvent to get 500µg/ml standard (stock solution) and 15 min sonic ate to dissolve it and the resulting stock solution 0.1ml was transferred to 10 ml volumetric flask and the volume was made up to the mark with mobile phase Methanol: Water (0.1% OPA prepared in (MEOH 60+40 Water v/v) solvent.

Sample Solution Preparations

Weight 20 trazodone tablets and calculate the average weight, accurately weight and transfer the sample equivalent to 5mg of trazodone into a 10 ml volumetric flask and diluent was added to make up the volume solicited for 10 min with occasional swirling the above solution was filter through 0.45 ml of this solution diluted up to 100 ml with diluent.

Optimized chromatographic conditions

- Equipment: ultra-high performance liquid chromatography.
- Column: C18 (4.6 x 100mm) 2.5 µm
- Mobile phase: methanol: orthophosphoric acid (60: 40)
- Flow rate: 0.7 ml /min
- Wavelength: 249 nm
- Injection volume: 20 ml
- Run time: 10 min

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chemistry proceedings

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Proceeding Paper

Conjugated Polymeric Liposomes: A Hybrid Carrier for Contemporary Drug Delivery †

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† Presented at the 26th International Electronic Conference on Synthetic Organic Chemistry, 15–30 November 2022; Available online: https://ecsoc-26.sciforum.net/.

Abstract: Liposomes are artificial vesicles encapsulating the drug moiety. The structural adaptability of liposomes has been employed to make them drug carriers for smart delivery systems, improving bioavailability, stability, target delivery, etc. However, conventional liposomes have some drawbacks, like limited payload, shorter in vivo circulatory lifespan, unregulated releasing properties, rapid clearance from bloodstream etc. Polymeric modification of the liposomes addressed and effectively overcome all the drawbacks of conventional liposomes. Polymeric materials offers indefinite structural diversity thus a substantial portion of the materials has been employed for drug-targeting methods and controlled drug release. Conjugation of liposomes and polymers develops a hybrid vesicle with intermediary physicochemical and stimulus responsive properties (pH, temperature, etc.). The reliability of liposomes with respect to pH, nature of drug moiety, enzyme, and immune response can be strengthened by polymers. Polymer modified liposomes also enhances pharmacokinetic and pharmacodynamic profile of the drug moiety. The form of polymer, cross-linking agent, interaction, and bonding used during polymerized modification of liposomes all have an impact on their activity. According to the extensive review of the literature that is accessible in the different data sources, research in this field is proactively involved in the synthesis of newer polymeric materials, and the supramolecular structuring of the different chemicals.

Keywords: polymer; liposome; conjugation; physicochemical; hybrid vesicle

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1. Introduction

In 1964, at the Babraham Institute in Cambridge, British haematologist Dr. Alec D. Bangham first discovered liposomes. The words Lipos" which means fat and "Soma. which means body, are the origins of the term "liposome" referring to the lipids (phospholipids), the components that made up its structure [1].

Liposomes are tiny, spherical artificial vesicles that can be built using cholesterol and safe phospholipids having particles ranging in size from 30 nm over micrometres [2]. The liposome has distinctive lipid bilayers which matches the cell's plasma membrane, is an efficient and secure format for administration by entrapping the drug moiety.

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Proceeding Paper

Development and Validation of RP-UHPLC Method for Determination of Sertraline in Bulk Drug and Dosage Form †

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† Presented at the 26th International Electronic Conference on Synthetic Organic Chemistry, 15–30 November 2022; Available online: https://ecsoc-26.sciforum.net/.

Abstract: Objective: The new, rapid, sensitive, simple, precise and accurate Reversed-Phase Ultra High Performance Liquid Chromatography (RP-UHPLC) method was developed and validated for determination of Sertraline in bulk drug and Pharmaceutical dosage form. Method: The UV Spectrum of Sertraline in water showed maximum wavelength at 273 nm. In RP-UHPLC method separation achieved by Agilent C18 (75 mm × 3.9 mm, 2 µm particle size) column using Acetonitrile: (0.1% OPA) Water (80:20 *v/v*) as mobile phase at flow rate 0.7 mL/min. Injection volume was 20 µL. RP-UHPLC detection carried out at 273 nm. Results: In RP-UHPLC method retention time was found to be 3.75 min. The Calibration curve was found to be linear ($r^2 = 0.999$) with concentration range of 10–50 µg/mL. The Accuracy (% recovery) for Sertraline was found to be 99–100%. The % RSD (intra-day and inter precision) values are not more than 2% hence the developed method is accurate and precise. The LOD and LOQ were found to be 0.2085 µg/mL and 0.6321 µg/mL respectively. Conclusion: The developed method was validated with respect to linearity, accuracy, precision, repeatability, robustness, LOD and LOQ as per ICH guidelines. The proposed method was used for routine analysis of Serraline in Bulk Drug and Solid Dosage form.

Keywords: Sertraline; antidepressant agent; method development; method validation; UV-Spectrophotometer; RP-UHPLC

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1. Introduction

Ultra-high performance liquid-chromatography (UHPLC) covers liquid chromatography separations implementing columns enclose particles smaller than the 2.5–5 µm sizes typically used in high-performance liquid chromatography (HPLC) [1]. UHPLC work on the same assumption as that of HPLC and of which governing principle is that, as column packing particle size decrease, efficiency and thus resolution increases. Separation using column contains smaller particles display enhance efficiency per unit time. High strength silica (HSS) is another type of column used in UHPLC. In UHPLC, high pore volume UHPLC particles do not acquire the mechanical stability necessary to hold up the high pressure innate of UHPLC separations. For that, there is established a novel silica particle and appropriate morphology required to give long and lifetime efficiency UHPLC column at high pressure likely 1000 bars [2].

Analytical methods development and validation are the continuous and inter-dependent task associated with the research and development, quality control and quality assurance department. Analytical method development is the process of selecting an accurate assay procedure to determine the composition of formulation [3].

Formulation and Evaluation of Microsphere Containing Telmisartan Drug by Ionotropic Gelation Method

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Abstract: Microsphere is novel drug delivery system for improving therapeutic action of drug, increasing prolong action lowering dose frequency of dosage form and to improve patient complies. Microsphere are small micron size particle ranging from 1um to 1000 um and are free flowing particle prepared to acquired prolonged and controlled drug delivery to enhance the drug bioavailability and stability and target specific sites The main aim of the present study was to formulate Telmisartan microspheres by ionotropic gelation technique using various polymer such as Carbopol grade 940, sodium alginate, chitosan etc. where 8-10 % calcium chloride is used as a cross linking agent to form a discrete microsphere with sodium alginate for the effective use in the treatment of hypertension. Prepared microsphere was evaluated for entrapment efficiency, drug content. Microsphere size, morphology, FTIR, DSC, in vitro drug release and drug release kinetics. The prepared microsphere was bulky, free flowing, spherical and showed a drug entrapment ranging between 50 – 80 % and had a mean particle size ranging from as determined by optical microscopy and SEM (showed microsphere with spherical and rough surface) and the percent yield range between 80 to 98.94 %. The size of microsphere was increasing by increasing concentration of alginate and increasing concentration of polymer (Carbopol and chitosan). The in vitro drug release was carried out in Phosphate buffer (PH 7.8). Percent drug release was decreased and increased in concentration of sodium alginate and calcium chloride. The present study conclusively that telmisartan microsphere could be prepared successfully and formulation F4 shows satisfactory result. Telmisartan microspheres were developed to control the release rate of the drug and target to specific site of the body to make an enormous impact in the formulation and development of novel drug delivery system and also improve efficient absorption and enhances oral bioavailability of the drug due to high surface to volume ratio.

Keywords: Microsphere, Bioavailability, sustained release, Targeted drug delivery, Hypertension, Sodium alginate, Carbopol.

INTRODUCTION-

A drug is defined as the active pharmaceutical ingredient that upon formulation into dosage form using excipient is used to deliver drug into the body to exhibit a therapeutic effect. The drug administration to show the therapeutic effect in the body is known as drug delivery [1]. Novel drug delivery system means of improving the therapeutic effectiveness of incorporated drug by providing controlled delivery, targeted and sustained delivery [2]. The drug delivery system that can precisely control the release rate or targeted drug to specific body site have an enormous impact on the health care system [3]. Microsphere are mono or multinuclear materials embedded in spherical coating matrix [4]. Microsphere are small micron size particle ranging from 1um to 1000um and are free flowing particle made up of natural or synthetic polymer. These are prepared to acquired prolonged and controlled drug delivery to enhance the bioavailability, stability and target specific sites. By using novel advanced technologies and new dosage forms a Novel drug delivery system has been developed [1].

TARGETED DRUG DELIVERY SYSTEM –

In this system the specific site is targeted in the body and the drug is released in a controlled manner for a period so that drug fluctuations are minimized. this system is suitable for cancerous tissues in the body that can target the specific tumor tissue and release the drug at the targeted area. The drug become active only at the targeted site, hence the tissues in the other body parts are not affected by the drug, this minimizes side effect and toxicity [1].

CONTROLLED DRUG DELIVERY SYSTEM –

Now a days, very few drugs are coming out of research and development and already existing drugs suffering the problems of resistance due to their irrational use specifically in the case of drug like antibiotics. Hence for more effective way are formulated by slight alteration in drug delivery [5,6]. These dosage forms are modified in such a way that the drug is release over a long time, maintaining the drug in the effective therapeutic region for prolonged period. The dosage forms are modified in such a way that the drug can be sustained and maintained for a specific period for a slow and controlled release. They can be modified into delayed release form from which the drug is released after lag time and show action [1].

Frequent administration of a drug is necessary when those have a shorter half-life and all these leads to a decrease in a patient's compliance. To overcome the above problem various type of controlled release dosage forms are formulated and altered. The controlled release dosage form maintaining a relatively constant drug level in the plasma by releasing the drug at a predetermined rate for an extended period. There are significant challenges in developing controlled release formulations for drugs with poor aqueous solubility which required both solubilization and engineering of release profile [5,6].

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Review Article
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Emulgel A Novel Perspective for Topical Drug Delivery System: A Review

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Keywords: Emulgel, Topical drug delivery, Polymer, Bioavailability

ABSTRACT

In novel drug delivery system, emulgel is one of the new technology used topically having characteristics of dual control release i.e. emulsion as well as gel. When gels and emulsions are combined, the dosage form is known as emulgel. The polymer can serve as emulsifiers and thickeners because the gelling capacity of these compounds provides the formulation of stable emulsions and creams by decreasing surface and in Emulgel, Topical drug delivery, Polymer, Bioavailability terfacial tension and at the same time increasing the viscosity of the aqueous phase. The presence of a gelling agent in the water phase converts a classical emulsion into an emulgel. This emulgel are having major benefits on novel vesicular systems as well as on conventional systems in various attributes. This review sets out to discuss benefits, limitations, method of preparation, main components of emulgel, and their parameters for evaluation.

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Proceeding Paper

A Phytochemical and Pharmacological Review of an Indian Plant: *Cissus quadrangularis* †

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† Presented at the 2nd International Electronic Conference on Biomedicines, 1–31 March 2023; Available online: https://ecb2023.sciforum.net/.

Abstract: *Cissus quadrangularis* (Vitaceae) is a common perennial succulent climber plant belonging to the Vitaceae family. The plant has a strong pharmacological profile with a variety of phytoconstituents and is geographically distributed throughout tropical and subtropical regions of the world. It is prominently found in India, Pakistan, and Bangladesh. The plant is found all over India, but its presence is dominantly observed in states such as Assam, Kerala, Odisha, Madhya Pradesh, Tamil Nadu, and Uttar Pradesh. The plant in India is popularly called 'Hadjod' or 'Asthisamharaka' and is very well established as a medicine related to the management of bone, muscles, and ligament issues. Traditionally, almost all aerial and underground parts have medicinal value, but the stem is most commonly used. Phytochemicals studies performed on the plant revealed the presence of a variety of constituents, viz., tannins, proteins, carbohydrates, phenol flavonoids, triterpenoids, phytosterols, glycosides, saponins, vitamin C, and alkaloids. In addition, these plants are also a rich source of calcium. The systematic review also established the pharmacological role of the plant as a bone setter and fractured bone healer; its antimicrobial, anti-diabetic, anti-inflammatory, anti-obesity, and anti-oxidant effects; bone turnover; cardiovascular and hepatoprotective properties; and many more. The current review article carried out a detailed discussion of its phytochemical and pharmacological potential.

Keywords: fracture healing; Cissus; wound healing; analgesic; anti-inflammatory

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1. Introduction

India is a country full of fauna and flora and holds a strong tradition of using flora and fauna as food supplements and medicines. As per the available data, it was estimated that the total number of higher plant species found on earth is 250,000, and of this number, approximately more than 70,000 plants are medicinal. In India alone, over 45,000 plant species exist, making India the world's 12th biodiversity center [1,2]. In addition to this rich fauna and flora, the very existence of an alternative system of medicines, namely Siddha, Ayurveda, Unani, Naturopathy, and homeopathy, in India officially established a very long, safe, and continuous use of herbs [3,4]. As of now, by carrying out a systematic literature study, it was evident that India presented about 8000 medicinal plant species from different alternative systems of medicine. In terms of numbers, around 700 medicinal plant species are reported from Ayurveda, 600 species are reported from Sidhha, 600 species of plants are reported from Amchi, 700 medicinal plant species are reported from Unani, 67 medicinal plant species are reported from Rigveda, 81 medicinal plant species are reported from Yajurveda [1,2], etc. Apart from the prescription drugs of alternative systems, plants are popularly used by millions of Indians as health food, spices, home remedies, and over-the-counter (OTC) drugs. The market for medicinal plants in India stood at INR 4.2 billion

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Proceedings

Salvia hispanica L. seeds: A rare medicinal herb and potential pharmaceutical additive

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† Presented at the title, place, and date.

Abstract: Salvia hispanica is a plant widespread to Central America. Chia is the common name for it. The seeds obtained from the current plant are most usually used. As public health awareness grows around the world, so does the need for functional foods with many health advantages. Salvia hispanica is a plant widespread to Central America. Chia is the common name for it. The seeds obtained from the current plant are most usually used. As public health awareness grows around the world, so does the need for functional foods with many health advantages. They are also known as "health food" due to their strong nutritional and therapeutic properties. When the seeds are soaked in a suitable solvent, such as water, they exude a sticky gel-like substance that can be employed as an excipient in both culinary and pharmaceutical compositions. This paper will go over all of the therapeutic benefits of the present plant and its parts, as well as the plant's use as an ingredient in foods and pharmaceuticals.

Keywords: *Salvia hispanica;* Chia; Medicinal uses; Additive; Pharmaceutical

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1. Introduction

Chia is the common name for several Salvia species, the most notable of which being *Salvia columbari-ae*, *Salvia hispanica*, and *Salvia polystachya*. Carolus Linnaeus (1707-1778) discovered *S. hispanica* growing wild in the new world and mistook it for a native plant from Spain.Chia, on the other hand, is native to Mexico and was introduced to Spain after Hernán Cortés resided there. Chia (*S. hispanica* L.) is a seed with unique significance in Latin America, owing to the fact that it has been consumed by Mesoamerican people since ancient times, and the term chia is credited to these people.This has been thoroughly chronicled by historians, Spaniard colonisers, and by local themselves[1]. Chia (*Salvia hispanica* L.) is a tiny seed produced by the annual herbaceous plant *Salvia hispanica* L. Because of its great nutritional and therapeutic values, Chia seeds have gained in popularity in recent years.Chia was grown by Mesopotamian tribes before disappearing for decades until it was rediscovered in the mid-twentieth century. Chia seeds are high in omega-3 fatty acids, polyunsaturated fatty acids, fibre, protein, vitamins, and minerals. Aside from that, the seeds are high in polyphenols and antioxidants such as caffeicacid, rosmarinic acid, myricetin, quercetin, and others. Chia has now been studied in a variety of disciplines. Chia seed advantages have been studied in the medical, pharmaceutical, and food industries all around the world.Chia oil is becoming one of the market's most valued oils. The oil has been produced using several extraction processes[2]. Salvia hispanica L. was given the common name chia by the indigenous South American peoples of the pre-Columbian and Aztec civilizations because of its medical properties. It has been highly recommended as an alternative crop for the field crop business due to its ability to flourish in arid environments[3].

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Proceedings Paper

A COMPREHENSIVE REVIEW ON A MARVEL FRUIT OF *ANNONA MURICATA*

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Abstract: The purpose of this review is to delve into the essence of Annona muricata Linn. A. muricata, also known as soursop, guanabana, and graviola, is a member of the Annonaceae family and has a long history of traditional uses. This is an evergreen plant that grows in tropical and subtropical regions of the world, primarily in Africa, South America, and Southeast Asia. The A. muricata plant's miraculous nature is a boon to mankind, and it has been widely used in folk medicine. A. muricata preparations on the market include candies, syrups, beverages, ice creams, and shakes. Several studies have concluded that the plant contains over 212 chemical constituents such as acetogenins, alkaloids, and phenols. The plant has antibacterial, antiviral, antifungal, antitumor, anthelminthic, analgesic, antiarthritic, hypotensive, anti-inflammatory, immune enhancing effects, and anti-diabetic activity. Although some toxicities have been reported, the extract of A. muricata has been found to be effective and safe. This review attempts to bring together the majority of the available information on A. muricata phytochemistry, traditional uses, biological activities, and toxicity.

Keywords: Annona muricata; Annonaceae; Annonaceous acetogenins; Cytotoxicity; Neurotoxicity

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1. Introduction

Natural products, particularly those derived from plants, have been used to help mankind maintain its health since the dawn of medicine. Over the last century, plant phytochemicals have been an important pipeline for pharmaceutical discovery. The value of active ingredients. The use of plants in agriculture and medicine has piqued scientists' interest. [1]

According to the World Health Organization (WHO), more than 80% of the world's population relies on traditional medicines to meet their primary health care needs6. The primary characteristics were medicinal plant chemical substances that exerted a physiologic action on the human body. The most important plant bioactive compounds were thought to be alkaloids, flavonoids, tannins, and phenolic compounds. The plant chemical Phytochemical Ethno-pharmacologicaffective approach to discovering new anti-infective agents from higher plants. [2]

Intensive chemical studies of this species' leaves and seeds have resulted in the isolation of a large number of acetogenins. Some of the isolated compounds exhibit interesting biological or pharmacological activities, such as antitumoral, cytotoxic, antiparasitic, and pesticidal properties. Because of their anti-parasitic and pesticidal properties, the roots of these species are used in traditional medicine.[3]

The extract of A. Suricata's fruits, seeds, bark, roots, and pericarp contain over 212 phytochemical varieties that are used to treat a variety of ailments. 5 According to his-

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Proceeding Paper

A Systematic Review: Ayurvedic Herbal Medicine for Women with Polycystic Ovary Syndrome †

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† Presented at the 2nd International Electronic Conference on Biomedicines, 1–31 March 2023; Available online: https://ecb2023.sciforum.net/.

Abstract: The endocrine disorder polycystic ovarian syndrome (PCOS) is complicated. In India, two out of every ten women have PCOS. PCOS can also be identified with a polycystic ovary morphology and an ovulatory hyperandrogenism. PCOS, defined as one of the most common female endocrine diseases, affects about 20–25% of women of reproductive age, and is thought to be one of the primary causes of female infertility. Metabolic abnormalities, irregular periods, hypertension, and increased insulin levels are more prone to occur in women with PCOS. In addition, there are more sub-follicular cysts and increased androgen production, including testosterone from the ovaries. Low vitamin levels in PCOS women place them at a high risk for developing severe COVID-19, a risk that may be increased by limited sun exposure brought on by COVID-19 quarantine measures. Therefore, there is a greater need for the public awareness of PCOS. PCOS is a treatable illness that can be treated with safe and effective natural remedies, including the use of various herbs and seeds. To decrease the cost, length, and side effects of current treatments, polyherbal formulations must be developed based on the aforementioned variables. By altering a woman's diet, exercise, doing yoga asanas, and altering her lifestyle, PCOS can be controlled. An effort has been made to review the utilization of natural remedies for PCOS treatment.

Keywords: PCOS; hyperandrogenism; herbs; seeds; yoga asanas

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1. Introduction

According to the WHO (World Health Organization), 116 million women worldwide, or approximately 3.4 percent, have PCOS [1]. Polycystic ovarian syndrome (6.5–6.7%) is the most common endocrinopathy condition diagnosed in premenopausal women. Polycystic ovarian syndrome, first identified by Stein and Leventhal in 1935, is linked to chronic oligoanovulation, polycystic ovarian morphology, as well as psychological and metabolic abnormalities [2]. Acne, alopecia, hirsutism, obesity, and other related illnesses are frequently observed in women with PCOS due to the high levels of androgens present in their bodies [3] Furthermore, prior studies in this area have shown that PCOS causes numerous physiological alterations in women's ovaries. According to American studies, 15% of women have type 2 diabetes mellitus (type 2 DM) and cardiovascular disease, which over time contributed to the emergence of PCOS symptoms throughout their reproductive years. [4]. According to twin and genomic research, PCOS, especially hyperandrogenism, is highly heritable. The most trustworthy PCOS gene candidate is a member of the TGF-ß superfamily that codes for the extracellular matrix protein fibrillin 3, which is the most reliable PCOS gene candidate [5]. Traditional herbal remedies are receiving a lot of attention in discussions regarding global health. Promotional, preventative, curative, and rehabilitative roles for traditional medicine have been established [6–8]. The advantage of herbal therapy over conventional therapy is that it is safer with fewer side effects, and

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DEVELOPMENT AND VALIDATION OF UV SPECTROSCOPIC METHOD FOR DETERMINATION OF METADOXINE IN BULK AND SOLID DOSAGE FORM

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ABSTRACT

The main objective was to Develop and Validate the UV-Spectroscopy method for the estimation of Metadoxine in bulk and pharmaceutical formulations as per ICH guidelines. It showed absorption maxima at **273 nm** in Methanol. The method was Linear in the range between **05-25 µg mL^{-1}.** Accuracy was found between **97.68- 98.22%.** Precision for Intra-day and Inter-day was found to be within the limits. The method was Simple, Precise, Accurate and Rapid for analysis of Metadoxine in Bulk and Tablet dosage form. Hence proposed developed method can be useful for routine and quality control analysis of Metadoxine in bulk and pharmaceutical formulation.

KEYWORDS: Metadoxine, Methanol, UV-Spectrophotometric, Melting Point.

INTRODUCTION

Chemically Metadoxine (MDL) is pyridoxol L-2-pyrolidone-5-carboxylate an ion pair that combines pyridoxine and pyrrolidone carboxylate. Metadoxine exerts several actions that are beneficial to patients with alcoholic liver diseases. It increases the clearance of alcohol and acetaldehyde and decreases the damaging effect of free radicals, restores ATP and glutathione levels, reduces steatosis and liver fibrosis.

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Review Article

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A BRIEF REVIEW ON MUCOADHESIVE DRUG DELIVERY SYSTEM IN PHARMACOLOGICAL TECHNOLOGY

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ABSTRACT

Since 1980 the concept of mucoadhesion has gained considerable interest in pharmaceutical technology. Mucoadhesion describe the attractive forces between a biological material and mucus membrane. Mucoadhesion drug delivery system prolong the resident time and facilitate in contact of the dosage form with the underlined absorption surface which results in improvements of the therapeutic performance of the drug. The mechanism of the mucoadhesive contain context stage and consideration stage which can be explained in diffusion and dehydration theory. Mucoadhesive theory include wetting theory, diffusion theory, fracture theory and electronic theory. Mucoadhesive dosage form an available in tablets patches, gels and solutions in dosage form. The mucoadhesive drug delivery system depends selection of suitable polymer with excellent mucosal adhesive properties. The review aims at compiling to potential benefits of mucoadhesive drug delivery system.

KEYWORDS: Mucoadhesive, Drug delivery, Polymers.

INTRODUCTION

Since the early 1980s, the concept of mucoadhesion has gained considerable interest in pharmaceutical technology.[1] Adhesion can be defined as the bond produced by contact between a pressure sensitive adhesive and a surface. The American Society ofTesting and Materials has defined it as the state in which two surfaces are held together by interfacial forces, which may consist of valence forces, interlocking actionor both. Mucoadhesive drug delivery systems prolong the residence time of the dosage form at the site of application or absorption. They facilitate an intimate contact of the dosage form with the underlying absorption surface and thus improve the therapeutic performance of the drug. In recent years, many such Mucoadhesive drug delivery systems have been developed for oral, buccal, nasal, rectal and vaginal routes for both systemic and local effects.[2] Dosage forms designed for Mucoadhesive drug delivery should be small and flexible enough to be acceptable for patients and should not cause irritation. Other desired characteristics of a Mucoadhesive dosage form include high drug loading capacity, controlled drug release (preferably unidirectional release), good Mucoadhesive properties, smooth surface, tastelessness, and convenient application. Erodible formulations can be beneficial because they do not require system retrieval at the endof desired dosing interval. A number of relevant Mucoadhesive dosage forms have been developed for a variety of drugs. Several peptides, including thyrotropin-releasing hormone (TRH), insulin, octreotide, leuprolide, and oxytocin, have been delivered via the mucosal route, albeit with relatively low bioavailability (0.1– 5%),[3] owing to their hydrophilicity and large molecular weight, as well as the inherent permeation and enzymatic barriers of the mucosa.

The development of sustain release dosage form can achieve the aim of releasing the drug slowly for a long period but this is not sufficient to get sustained therapeutic effect. They may be cleared from the site of absorption before emptying the drug content. Instead, the Mucoadhesive dosage form will serve both the purposes of sustain release and presence of dosage form at the site of absorption. In this regard, our review is high lighting few aspects of Mucoadhesive drug delivery systems.[4]

Mucoadhesive

Mucoadhesion describes the attractive forces between a biological material and mucus or mucous membrane. Mucous membranes adhere to epithelial surfaces such as

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FORMULATION AND EVALUATION Of POLYHERBAL HAIR OIL

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ABSTRACT

Mankind use various products to enhance beauty and elegance to look young and charming. Cosmetics thus play a vital role in human life. Now a days, herbal cosmetic are widely used because of the belief that they have fewer side effects and better safety. Hair is one of the primary parts of the body which acts as a protective appendage. The objective of the present work is to develop a hair oil for general purpose (daily use) using various herbs. The formulated oil was evaluated for its organoleptic properties, acid value, saponification value, refractive index, pH etc. Herbal hair oil not only moisturizes scalp but also converse dry scalp and dry hair conditions. It bestows numerous essential nutrients required to maintain normal functions of the sebaceous gland and promote natural hair growth.The objective of these study involve preparation of polyherbal hair oil using herbs like aamla,brahmi,tridex,neem and Hibiscus.These formulations is prepared by using direct boiling,paste and cloth method. Alopecia is dermatological disorders with psychosocial implications on patients with hair loss. Antioxidant are helpful increasing blood circulation and the help in hair growth as well as in treatment of lots of disease.

Key words : Herbal oil,cosmetics

Introduction :

Hair has a several useful function in the animal world. It forms a protective cushion around the head & other delicate parts of the body. Hair oil are formulated to give the hair good shine & gloss .This is achive by applying a thin continuous film of an oily material on the hair surface without causing stickiness. They are mainly oils of low viscosity. Many herbs are used in hair oil are Neem,Amala.,Brahmi, tridex and Hibiscus.[1] Herbal hair oil is more preferred and is used in many ailments of hair. They promote hair growth, improve elegance of hair and prevent hair fall. Hair oil not

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Comparitive study of anti-ulcer activity of marketed preparations of *Tinospora cardifolia* (guduchi) and *Glycerrhiza glabra* (jyeshthmadh) with proton pump inhibitor (rabeprazole).

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Abstract

Peptic ulcer, most common disorder of the GIT has multifactorial causes in its pathophysiology and cannot achieve a complete eradication with a single drug hence search of drugs from various systems of medicines like ayurveda, siddha, unani is a common practice.

Ulcers were induced in 48 hours fasted albino rats by pylorus legations. In each induction procedure there were four groups namely control, positive control and two tests and each group containing four animals. In all four separate groups, the groups received oral administration of guduchi (*Tinospora cardifolia*) (1000 mg/kg) and jyeshthmadh (Glycerriza glabra) (1000 mg/kg) prior to ulcer induction showed significant reduction in the occurrence of gastric ulcers as compared to control received distilled water and positive control group received Rabeprozole (500 mg/kg).Both test drugs showed significant reduction in gastric juice volume and total acidity as well as significant increase in gastric pH. When anti-ulcer activity of Jyeshthmadh and Guduchi was compared, guduchi showed more potency than jyeshthmadh.

These results emphasize on the need to diversify alternative therapeutic approaches pertaining to herbal medicine. Wherein a single easily available plant may provide answer to several therapeutic challenges as observed in antiulcer activity shown by guduchi and jyeshthmadh.

Keywords: Anti-ulcer activity, Jyeshthmadh, Guduchi, Rabeprazole.

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Introduction

Peptic ulcer is one of the major ailments affecting about 60% of human adults and nearly 80% of child population in tropical countries. Peptic ulcers one believed to develop because of an imbalance between aggressive factors like acid, pepsin, bile salts and defensive factors such as mucus, bicarbonate, blood flow, epithelial cell restoration and prostaglandin [1]. Most of the studies suggest that either the defect in antral-pylorus-duodenal motility or a general abnormal motility patterns permits duodenal contents to reflex into the stomach leading to damage to gastric mucosa [2].

Stress ulcers have been defined as acute ulcerations that is usually multiple and commonly located in gastric body and fundus which occur in majority of severely ill or injured patients. Patients at risk of developing stress ulcers are those who are severely ill with septicemia, shock, multiple trauma, burns, major surgery or multiple organ failure [3].

Several plants are known to possess antiulcer activity. The prominent among these herbs include guduchi (*Tinospora cardifolia*) and jyeshthmadh (*Glycerrhiza glabra*) [4]. The present work aims at comparing the antiulcer activity of guduchi (*Tinospora cardifolia*) and jyeshthmadh (*Glycerrhiza glabra*) using proton pump inhibitor (rabeprazole) as standard. The anti-ulcer activity was compared in pylorus ligated model in albino rats.

Materials and Methods

Plant material

The marketed preparations of guduchi (*Tinospora cardifolia*) and jyeshthmadh (*Glycerrhiza glabra*) were procured from "Phadke distributors, Sangli" The preparations were in powder form and both the drugs are known to have antiulcer activity. Rabeprazole used in the experiment was obtained from F.D.C. Pharmaceuticals.

Animals

Adult albino rats (Wister albino strain) of either sex weighing 150-200 gm were used for the study. They were housed in polypropylene cages and maintained under standard conditions (12 hours light/12 hours dark cycle, 25°C ± 3°C, 45%-60% humidity) Animals were fed with chow diet and water ad libitum. All experiment

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Formulation and Evaluation of Herbal Face Wash Gel

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Abstract: ***Acne is the common skin problem that 85% of the teenagers face today. Natural remedies are more acceptable in the faith that they are safer with less side effects than the synthetic ones. Natural remedies are more acceptable with the belief that they are safe and having less side effects. Herbal drugs have been used since many years not only in Asian countries but also worldwide for social well being. Herbal formulations have rising demand in the world market. In this study, herbal anti-acne face wash gels were prepared using polymers Carbopol and extract of aegle marmelos (bel patra). bel patra show the antibacterial property and are widely used in modern herbal medicine. Results showed that the gels were non-irritant, stable and posses anti-acne activity. From this study, herbal Gel was proved to be stable and considered as an effective herbal formulation for acne treatment. Prepared formulation was evaluated for various parameters like colour, appearance, consistency, pH, viscosity.***

Keywords: ***Acne, carbopol, anti-acne activity, aegle marmelos .***

I. INTRODUCTION

The oldest healthcare system in the world is likely India's herbal drug business. The Vedas, an ancient religious text of the Indians, describe an ancient form of herbal healing because the history of herbs in ancient India is so old. The use of herbs and natural remedies to treat health problems is central to the ancient herbal healing practices of Ayurveda and Unani. Even though it might seem like herbal remedies are something new to western healers and doctors, the majority of recommended medications still contain plant extracts.
Acne may cause long-lasting and detrimental psychosocial and physical effects. It is associated with depression and anxiety, regardless of disease severity, although the psychological effects usually improve with treatment. Furthermore, acne may cause permanent scarring that is difficult to correct. Acne vulgaris is characterized by noninflammatory, open or closed comedowns and by inflammatory papules, pustules, and nodules. Acne vulgaris typically affects the areas of skin with the densest population of sebaceous follicles (e.g., face, upper chest, back). Local symptoms of acne vulgaris may include pain, tenderness, or erythema Systemic symptoms are most often absent in acne vulgaris. Severe acne with associated systemic signs and symptoms, such as fever, is referred to as acne fulminans. Severe acne, characterized by multiple comedowns, without the presence of systemic symptoms, is known as acne conglobate. A gel is a solid jelly like material that can have properties ranging from soft and weak to hard and tough. Gels are defined as a substantially dilute cross linked system, which exhibits no flow when in the steady-state. By weight, gels are mostly liquid, yet they behave like solids due to a three dimensional cross-linked network within the liquid. It is the crosslinking within the fluid that gives a gel its structure (hardness) and contributes to the adhesive stick track. The therapeutic use of medicinal plants has gained considerable momentum in the world during the past decade. The overuse of synthetic drugs with impurities results in higher incidence of adverse drug reactions in more advanced communities has motivated mankind to go back to nature for safer remedies. However, it should be ensured that commercial formulations based on medicinal plants are safe, effective and of standard quality. Today, over the world, there is a great deal of interest in Ayurvedic system of medicine and thus the demand for various commonly used medicinal plants in the production Ayurvedic medicine is ever increasing.[1]

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A REVIEW ON ARGYRIA: A DERMATOLOGICAL DISORDER

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ABSTRACT

Argyria is a dermatologic condition that is caused by exposure to or ingestion of silver, and it presents with the insidious onset of grey or blue mucocutaneous discoloration. The word argyria is derived from the ancient Greek word for silver, argyros. Argyria is an extremely rare condition first detailed by Hill and Pillsbury in 1939. Argyria can cause localized or generalized skin pigmentation, depending on the form of silver exposure. Local argyria affects in limited regions of the body, such as patches of skin, parts of the mucous membrane or the conjunctiva and generalized argyria affects large areas over much of the visible surface of the body. It can turn your skin, eyes, internal organs, nails, and gums a blue-grey color, especially in areas of your body exposed to sunlight. That change in your skin color is permanent. Silver isn't necessarily a bad thing, and has some medical uses. For example, it's been used in bandages, salves, and medications like eye drops. Clinically, argyria characteristically presents with a blue or blue-grey uniform pigmentation of the skin (Intensity depend upon sunlight), mucous membranes, and nails. From nail, lunula is affected, and the hair take on a metallic look. The gums take a blue coloration. The conjunctival pigmentation is bluish grey or dark brown. It can also affect eyelids, lacrimal caruncle, semilunar fold, cornea, lens, vitreous humor, retina, and optic disc.[1] Argyria is a rare condition it occurs when the human body is intake or contact with excessive amount of silver. Because of silver is not absorbed by normal skin, Argyria is caused by absorption of silver via implantation or ingestion from medical instrument. On a daily basis the people come into contact with vary small amount of silver. Silver is present in drinking water, food and even it is present in air which we breathe.[2] The product which contain high amount of silver surpass the body's renal, its leading to silver molecules being deposited in skin and its appendages, mucosae and internal organs (likes the kidney, eye, bone marrow, spleen and central nervous system) and it is acquire a blue-gray pigmentation. Now overexposure of occupational or iatrogenic silver is very rare, but some cases of Argyria related to the ingestion of silver compounds as folk remedies are still present. Argyria is harmless and has a benign course, but neurotoxicity and myopathy have been associated with a few cases of Argyria. Silver dates back is use as a medicine from beginning of medical history. The required amount of silver is absorbed to cause generalized Argyria pigmentation is unknown. There are several different types of exposure (Accidental, occupation, environment and therapeutic), routes of administration (oral, percutaneous and intranasal). According to some authors, skin pigmentation not only caused by silver deposition (in sulfite and selenite form) in the dermis area of skin but also by stimulation of melanine synthesis. The normal concentration of silver in human body is <2.5 mcg/L absorbed silver gets metabolized to silver ion and bind to protein like macroglobulins and albumin.[3]

Keywords: Melanin, Skin Pigmentation, Siler, Dermatological Disease.

I. INTRODUCTION

Argyria is mainly occurring in the people whose are contact with silver for long time or the consumption of medicine which contain silver. The people who work in the factories that manufacturing silver products, due to the breathe they intake silver or its compounds. In the past the some of the workers become argyric. Is treat a variety of diseases the colloidal silver a liquid suspension of microscopic silver particle, was also used as an internal medication. [4] The term Argyria was first use by Funchs in 1840. In the middle age silver nitrate was used as medicine for treatment of nervous system disorder such as epilepsy and tubes dorsalis.[4] After observing Dr. Halstead of Johns Hopkins University apply silver foil and gauze to wounds to prevent infection in 1897. Silver popularly used as an anti-infective. In the pre antibiotic era silver was used in nose drops in

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Formulation and Evaluation of Herbal Handwash Tablet

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Abstract: ***The herbal handwash tablet is formulated using extract of orange peel and is effective against germ killing. It is travel friendly, easy to carry, and has an orange fragrance. It also has antimicrobial properties and prevents skin related problems such as fungal infection, ringworm, eczema, contact dermatitis, actinic keratosis, etc. It has good antimicrobial activity. Herbal extracts have antimicrobial and antifungal properties, which are explored for human use. A formulation of herbal handwash tablet is based on the plant extract and synthetic chemicals, with the core ingredient extracted from the orange peel. It is suitable for human skin and can be a therapeutic alternative to skin problems.***
Keywords: Herbal handwash tablet, antimicrobial, Herbal formulation.

I. INTRODUCTION

Hand hygiene can reduce the spread of infectious microorganisms.[1] Studies have shown the effectiveness of various cleansers..[2] Concerns have been raised about antibacterial soaps and the emergence of resistant bacteria, [3] FDA restricts marketing of antiseptic wash products with triclosan and triclocarban.[4] Foam soaps are more cost-effective and widely used in health care, food industry, and school settings to reduce hand microbial burden.[5] Skin pathogens must be avoided to prevent nosocomial infection.[6] Hand Care Workers should use antiseptic hand washing to reduce the transmission of MDRs.[7] Antiseptic chemicals reduce contagious disease transmission in healthcare settings.[8] Their Frequent use can cause skin irritation and pathogen resistance.[9] Skin infections are caused by organisms such as Staphylococcus aureus and Pseudomonas aeruginosa.[10] According to some studies, resistance to chemical antiseptics has resulted in outbreaks. [11,12] Plant-based antimicrobials are effective in treating infectious diseases without side effects. Flavonoids and polypeptides found in plants used in traditional medicine have been found to be active against a wide range of microorganisms.[13] Herbal medicine uses plants for medicinal purposes to promote a healthy lifestyle. It was commonly used to supply first-line and common health suppliers.[14] Herbal medicines used to treat and cure diseases in India since ancient times.[15] Herbal medicines have therapeutic applications for a variety of illnesses.[16] Hand hygiene is one of the most important preventative measures for harmful bacterial infections and infection.[17] Hand washing removes soil, dirt, and microorganisms to prevent transmission.[18] Hand washing is essential for protecting skin from microorganisms and preventing diseases.[19] The importance of handwashing for human health was first recognized in the mid-19th century, and the US Centers for Disease Control and Prevention began promoting it in the 1980s due to foodborne outbreaks and healthcare-associated diseases.[20] Surfactants are often used in cleaning compositions, but their solubilizing or emulsifying power can damage the dermal oils of the skin when used repeatedly. [21,22] Natural sources are cheaper, more readily available, and safer than chemical products. Research is needed to find novel, safe, and efficient antimicrobial medicines. This work creates herbal hand soap using a variety of plant extracts that may have antibacterial properties. Traditional uses of ocimum sanctum include treating illnesses, their consequences, and microorganisms.[23,24] One 2017 research that appeared in the International Journal of Current Microbiology and Applied Sciences examined the antibacterial efficacy of neem, tulsi, and aloe vera-based herbal handwash solutions. The study came to the conclusion that these natural substances might be employed as viable substitutes for synthetic antimicrobial agents since the herbal solutions shown strong antibacterial activity against both Gram-positive and Gram-negative bacteria.[25] The antioxidant and antibacterial qualities of orange peel extract were examined in a 2017 study that was published in the Journal of Food Science and Technology. According to the study, the extract had considerable antioxidant activity and effectively slowed the development of a variety of bacteria, including Staphylococcus aureus and E. coli. According to the authors, orange peel extract may be utilised as a natural and secure substitute for synthetic antimicrobial agents in a variety of sectors, including the food and cosmetic industries. An investigation of the antibacterial activity of herbal handwash solutions manufactured with all-natural components, including orange peel extract, was published in the International Journal of Current Microbiology and Applied Sciences in 2017. The study came to the conclusion that these natural substances might be employed as viable substitutes for synthetic antimicrobial agents since the herbal solutions shown strong antibacterial activity against both Gram-positive and Gram-negative bacteria.[26]

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Formulations and Evaluations of Herbal Anti-Acne Gel from Coriander and Garlic

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Abstract: ***Acne is an inflammatory condition of the skin's sebaceous follicles. The goal of the current study was to create and assess a coriander and garlic aqueous extract topical anti-acne gel. The antibacterial activity of coriander and garlic aqueous extract against Propionibacterium acnes and Staphylococcus epidermidis was examined. Agar dilution method was used to calculate concentration. The physical characteristics, Spreadibility, extrudability, ph, viscosity of the topical formulations was designed and tested. There are many pharmacological effects of garlic, including antibacterial, anticancer, and anti-inflammatory effects. Fresh pearl garlic or garlic with a single clove was utilised as the raw material in this study to make the garlic extracts. This project's goal is to get the garlic ready. Extracts made with non-chemical methods. The non-chemical extraction, the garlic extract was made by combining honey and garlic in a 1:1 ratio (w/v). The results showed that formulation F1 had the highest drug content (94%), highest level of stability, and zone of greatest efficacy, inhibition among all formulations.***

Keywords: Acne valgaris, Antibacterial activity, Coriander, Garlic, Topical gel

I. INTRODUCTION

The mobility of the dispersing medium is constrained in semi-rigid systems known as gels by an interlacing three-dimensional network of particles or solvated macromolecules of the dispersed phase. The term "gel" is derived from "gelatin. "gel" has roots in the Latin words "gelu" for "frost" Strong primary valences, as those found in silica acid gels, to weaker hydrogen bonds and Vander Waals forces may be the driving forces for the coupling between gelling agent particles.[1].

A. *Properties of Gel* [2-4]

1) It should have suitable anti-microbial agent.
2) The topical gel must not be sticky.
3) The ophthalmic gel must be sterile.

B. *Acne*

Acne vulgaris, also known as simply "acne," is a skin condition that affects people that is characterised by red, scaly skin (seborrhoea), pinhead-sized papules (papules), giant papules (nodules), pimples, and scars. Acne affects skin with numerous sebaceous follicles in places like the back, chest [5]

C. *Sign and Symptoms of Acne*

There are papules, nodules (big papules), comedowns, pustules, seborrhoea (increased oil-sebum discharge), and scarring Acne's appearance varies according to skin tone, and it's linked to psychological and social issues. Acne scarring is a sign of dermal inflammation and is caused by the wound healing process, which deposits collagen in one area [6].

D. *Drug Use*

Acne is brought on by medications such as phenytoin, isoniazid, phenobarbital, lithium, ethionamide, steroids, azathioprine, quinine, and rifampin [7].

E. *Parasitic*

The parasite mite Demodex is connected with acne, but it is unclear whether Demodex or bacteria associated with Demodex are to blame for the consequences [8]

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FORMULATION AND EVALUATION OF CAMPHOR ALOE SOAP

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1] ABSTRACT

An herbal soap and hand sanitizer was formulated using the prevention and treatment of various skin problems. Aloe derived from Arabic words 'Aloe' means 'shining bitter substance' and 'Vera' means 'True. It belongs to the family of 'Alliacea. Ayurveda cosmetic are also knownas herbal cosmetic the natural content in the herb does have any side effect on the human body[1] most herbal supplement are based on the several botanical ingredient with long history of traditional or folk medicine usage. Among the numerous botanical ingredient available in the market today.[2] Numerous chemical toxins microorganism present in the atmosphere may cause chemical infection and damage to skin cosmetic alone are not sufficient to take care of the skinand body. Aloe Vera is also known as 'Ghrit kumari' and many people which is use for wellness of health and medicine purpose. Its involves the health benefits of wound healing, treating burns, minimizing front bite damage, protect skin damage from X-rays, lung cancer, reduce blood sugar in diabetes improves immune system. Reetha act as detergent and having cleaning and foaming activity and tulsi show antiviral activity.[3]

KEYWORDS: Herbal soap, formulation, Evaluation.

2] INTRODUCTION

Soap are using for staying fresh and for hygienic purpose but after effect of using chemical soap is dry skin, skin damage and skin allergic. Soap are from chemical lead to many skin infectionand disease. They cloge the pores of skin and hinder cell of breathing by delaying the natural renewal process of the skin and it make the skin age faster. Moreover, the useof chemical leads to sever damage to the environment also and being the largest sense

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RESEARCH ARTICLE

Development of Nasal *In-situ* Gel Formulation of Fexofenadine HCl Using Gellan Gum (Gelerite®)

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ABSTRACT

This study aimed to develop and assess an *in-situ* nasal gel containing fexofenadine hydrochloride for nasal administration by employing polymers with *in-situ* gelling characteristics. Formulations containing Gelerite, HPMC K4M and β-cyclodextrin were used to formulate in situ nasal gel. Formulations were liquid before administration and quickly converted to gel after nasal administration. The FTIR studies of drugs, polymers and physical mixtures of drug polymers were carried out. These research results indicated that, in comparison to pure drugs, there have been no considerable modifications in the drug bands. Hence, the FTIR study revealed that the formulation doesn't have any drug-polymer interaction. In order to estimate rheological studies, a Fungilab Brookfield viscometer was used to test the formulation's viscosity. The ranges of the rheological properties of the solution and gel were shown to be 91 ± 1.73 to 125 ± 0.77 and 2740 ± 1.55 to 4675 ± 1.43, respectively. The gel strength of formulations F1 to F9 was found to be in the range of 34 ± 1.00 to 51.23 ± 1.77 seconds. It was shown that the viscosity of the formulation decreased at increasing shear stress, exhibiting shear thinning behavior. A viscosity of formulation increase was noticed with an increase in polymer ratio. All formulations were subjected to an *in-vitro* diffusion analysis, which will demonstrate the impact of various factors on the formulation's ability to release the drugs.

Keywords: Fexofenadine hydrochloride, *In-vitro* diffusion, Nasal drug delivery.

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Conflict of interest: None

INTRODUCTION

Because of the comparatively highly permeable nasal epithelial membrane, which avoids first-pass metabolism and enhances patient compliance, non-invasive mucoadhesive drug delivery through the nose is the most promising technique.[1-4] However, the formulation's bioavailability is often quite low following nasal administration. One of the barriers to effective drug administration through the nose is nasal mucociliary clearance. As a result, the formulation effectively disallows prolonged medication administration while allowing for drug absorption.[5,6]

Various methods have been employed to improve medication absorption across the nasal mucosa, including the development of acceptable nasal formulations using bioadhesive polymers, solubilizing and penetration enhancers, and proteolytic enzyme inhibitors. The effectiveness of using a solubilizer and penetration enhancer for nasal drug administration needs to be proven among the approaches outlined above.[7,8]

MATERIAL AND METHODS

Material

Fexofenadine HCl, procured gift sample from Sanofi India, Ankleshwar, Gellan Gum (Gelrite®), β-cyclodextrin, HPMC K4M purchased from Yarrow Chemical in Mumbai. Sodium alginate, mannitol, polyethylene glycol, propylparaben and methyl paraben were procured from Loba chemicals.[9-11]

Method of Preparation of Nasal Mucoadhesive Ion Induced *in-situ* Nasal Gel of Fexofenadine HCl

Double-distilled water was used to prepare a polymeric solution of Gelrite® (Gellan gum).[8-10] and HPMC K4M,[11] which was then homogenized with a mechanical stirrer in a water for 30 minutes at 90°C. Polymeric solutions were gently heated in a water bath after preservatives such as ethyl parabens, mannitol, and polyethylene glycol were added appropriately. The solution was subsequently cooled to room temperature. After mixing the drug with a small amount of methanol that included β-cyclodextrin, it was sonicated. To a beaker containing a polymeric mixture, Fexofenadine HCl

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Research on the development and validation of UV-spectrophotometric and HPLC method determination of metronidazole in bulk and formulation.

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ABSTRACT: The objective of this work was to create an HPLC analytical technique that is quick, easy to use, and sensitive for quantifying metronidazole in pharmaceutical formulations. Chromatographic separation has been carried out using a C18 column (4.6 X 250) as the stationary phase and 0.1 ml OPA (pH 3) and methnol,water (62+ 38 percent v/v) as the mobile phase at a flow rate of 0.7 ml/ UV detection was carried out at a wavelength of 318 nm. According to the ICH guidelines, linearity, accuracy, range, and robustness were all within acceptable limits. This approach provides a high level of resolution (swartz, 2007)

Keywords: HPLC, UV Spectroscopy, Metronidazol ,validation method

I. INTRODUCTION :

Metronidazole has antibacterial and antiprotozoal effects and cures amebiasis, trichomoniasis, and giardiasis. anaerobic infectious diseases respond well to metronidazole therapy.[1] The majority of obligatory anaerobes have been demonstrated to be resistant to metronidazole's antibacterial effects, although investigations conducted in vitro have found that neither facultative anaerobes nor obligate aerobes are significantly affected. The antimicrobial cytotoxic actions of metronidazole, which harm microorganisms' DNA strands, are probably caused by anaerobic organisms reducing the nitro group of the antibiotic.[2]

Metronidazole is a commonly utilised antibiotic to treat infections caused by protozoa, microaerophilic bacteria, and anaerobic bacteria. It is cytotoxic to facultative anaerobic microorganisms.[3]

Antibiotic and antiprotozoal medication metronidazole. It is 2-(2-methyl-5-nitro-1H-imidazol-1-yl)ethanol chemically. [4] formula C6H9N3O3, the bioavailability of the medication is 80% oral, 60% rectal, and 25% vaginal. and drug excretion was 77% in the urine and 14% in the faeces. used in medicine to treat amoebiasis, pelvic inflammatory illness, intra abdominal infections, and bacterial vaginosis. [5]

The goal of the current work is to provide a precise and trustworthy HPLC technique for simultaneously estimating metronidazole in solid dose form.[6]

Chemically, metronidazole is 2-methyl-5-nitroimidazole1-ethanol and has the structural formula as shown on Fig1

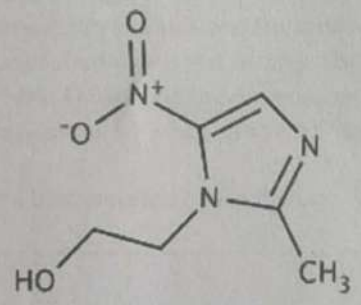

Figure no.1 of Structure of Metronidazole

II. MATERIALS AND METHODS

Chemicals and reagents:HPLC grade water, acetonitrile, methanol, and OPA from Merck.ltd were used in this study. An analytically pure metronidazole working standard was obtained from Swapnarorp Drug & Pharmaceutical.

A local store provided metronidazole 200mg tablets

Instrumentation: The Agilent Tech. Gradient System with Auto injector, equipped with a Quaternary Gradient (G130A) S.NO. DE9180834 pump, a 20-l injection loop, and a UV (DAD) G13148 S.NO. DE71365875 Absorbance detector,

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Proceeding Paper

Phytochemistry of *Uvaria narum*: A Multifaceted Perspective and Ethnopharmacological Potential †

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† Presented 26th International Electronic Conference on Synthetic Organic Chemistry, 15–30 November 2022. Available online: https://ecsoc-26.sciforum.net/.

Abstract: The Blooming ethnomedicinal plant *Uvaria narum* (Dunal) Wall is mostly found in the deep forests of the Western Ghats and belongs to the Annonaceae family. *Uvaria narum* is a spreading, pubescent shrub with large, dark bluish-green leaves. Phytochemistry and pharmacognostic studies have revealed that the plant possesses variety of phytochemicals that are remarkable and beneficial to humans. The Plant possesses a number of beneficial properties, such as antioxidant activity exhibited by the presence of Polyphenols and tannins, antifungal activity brought on by the benzoic acid moiety, and tumor-fighting abilities contributed by terpenoid and alkaloids. The presence of phytoconsituents in plants has been attributed to various medicinal properties in plants like anticancer activities. The plant may also be considered against ageing and other diseases caused by free radicals. In vitro cytotoxicity is due to terpenoid, phytosterols, and flavonoids, whereas the liver is protected by flavonoids. The chemical profile of plant shows that Acetogenins including Stereoisomers are important constituents of the root bark. Eczema, itching, varicose veins, haemorrhoids, jaundice, inflammation, and fever are the main ailments for which this herb is used.

Keywords: *Uvaria narum*; benzoic acid; terpenoid; acetogenins; tumor-fighting

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1. Introduction

India, which is aptly known as the Botanical Garden of the World, is the country that produces the most medicinal plants. Several medicinal herbs have been used by the indigenous system of medicine for thousands of years. India has a valuable heritage of herbal remedies for various ailments [1]. About 120 genera and more than 2000 species make up the enormous plant family known as the Annonaceae. It is a highly uniform family in terms of habitat and anatomy. This family is valuable economically because it produces edible fruits and oils [2]. Approximately 210 species of the Annonaceae have been identified, and they are widely distributed in tropical and subtropical wet forests in Africa, Madagascar, continental Asia, Malaysia, northern Australia, and Melanesia. Some Uvaria species are known to possess biologically valuable compounds, which have a number of therapeutic characteristics, and are often evergreen [3]. Uvaria is a genus of flowering plants in the soursop family, Annonaceae. Because several species in this genus produce edible fruits that resemble grapes, the name Uvaria is derived from the Latin word uva, which means grape. These are spectacular bushes with sparsely haired branchlets. It has huge, woody stems and is a climbing shrub. Uvaria is a sizable straggling shrub

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Proceedings Paper

Medicinal Traits of the Phenolic Compound from *Foeniculum vulgare* for Oligomenorrhea †

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† Presented at the 26th International Electronic Conference on Synthetic Organic Chemistry, 15–30 November 2022; Available online: https://ecsoc-26.sciforum.net/.

Abstract: A phenolic compound in *Foeniculum vulgare* can improve human health. *Foeniculum vulgar* contains flavonoids, glycosides, and other constituents that are used for medicinal ailments. Trans-anethole, fenchone, and estragole essential oils are the main ingredients in *F. vulgare* seeds. The principle component of fennel oil, Anethole is having structural similarity with the synthetic oestrogen diethylstilboestrol which makes it an active estrogenic agent. Women with PCOS may exhibit obesity, amenorrhea, oligomenorrhea, infertility, or androgenic feature, which are characterized by the absence of ovulation and hyperandrogenism. Oligomenorrhea is a kind of irregular menstruation periods. Treatment of oligomenorrhea depends on the causes; the main cause of oligomenorrhea is polycystic ovarian syndrome (PCOS) present with 75%-85% experiencing infrequent periods. The mini-review focuses on *F. vulgare* seeds as an advantageous addition to treat PCOS. Women with PCOS also have a lower level of hormone progesterone due to the absence or reduction in ovulation. Numerous phytoestrogen can be found in *F. vulgare* seeds, with less insulin resistance and lower blood sugar level, fennel phytoestrogen content is beneficial. It is also thought to aid in reducing the cellular imbalance that causes PCOS's metabolic abnormalities.

Keywords: *Foeniculum vulgare* ; Phytoestrogen; anethole; Oligomenorrhea; polycystic ovarian syndrome

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1. Introduction

Fennel, also known as *Foeniculum vulgare* (FVE), is a popular medicinal herb that is indigenous to the Mediterranean region. It is grown in various parts of Europe and Asia, and much of it is imported from countries like Egypt, China, and India [1].The biennial Apiaceae family member *Foeniculum vulgare* is a medicinal and aromatic fruit (Umbelliferaceae). With bright yellow flowers and delicately textured leaves, it is a hardy perennial plant having hollow stems that allow it to grow to a height of up to 2.5 m. The final section of each leaf is filiform (like a thread) and about 0.5 mm wide. Leaves grow to a height of 40 cm. Compound umbels are the structures that form flower terminals. Dry seeds that are 4–10 mm long make up the fruit [2]. FVE fruit has a long history of use as a food and medicinal. It has long been held that the plant increases the production of breast milk and functions as a carminative, which helps manage flatulence. Additionally, this herb has been said to increase libido, stimulate menstrual flow, lessen symptoms of the male climate, expedite delivery, ease indigestion, and relieve coughing [3].

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Proceeding Paper

Clomiphene Citrate as Nanomedicine Assistance in Ovulatory Disorders and Its Hyphenated Techniques †

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† Presented at the 4th International Online Conference on Nanomaterials, 5–19 May 2023; Available online: https://iocn2023.sciforum.net/.

Abstract: Nanotechnology has prompted new aspirations for managing modern human challenges. Furthermore, it has been utilized for aid in the prevention, diagnosis, and treatment of ovulatory disorders. Women with ovulatory issues may benefit from formulations using nanotechnology as an alternative possible treatment. Clomiphene citrate is a nonsteroidal, ovulatory stimulant that acts as a selective estrogen receptor modulator (SERM). It is a triphenyl ethylene stilbene derivative that is primarily used to trigger ovulation in female infertility cases where there is anovulation. Anovulatory infertility is most frequently caused by polycystic ovarian syndrome (PCOS), which is a gynecological endocrine disorder. Elevated serum concentrations of androgens, LH, and insulin are the main features of its endocrine profile. The primary goal of treating PCOS-related infertility is to increase the amount of FSH that is exposed to the ovary, either by antagonizing the estrogenic effects of clomiphene citrate in the hypothalamus or by directly affecting the ovary using recombinant follicle-stimulating hormone (FSH). In about 80% of treated individuals, ovulation is recovered by clomiphene citrate. In this review, we discuss the chemistry and pharmacology of clomiphene citrate, as well as the delivery of clomiphene citrate via nanosystems for improving solubility and limiting side-effects. The hyphenated techniques for analyzing and quantifying clomiphene citrate in solvents and biological samples are also overviewed.

Keywords: clomiphene citrate; nanomedicine; ovulatory disorder; PCOS; hyphenated techniques

Citation: Girase, T.; Patil, J.; Tatiya, A.; Patil, D.; Patil, M. Clomiphene Citrate as Nanomedicine Assistance in Ovulatory Disorders and Its Hyphenated Techniques. *Mater. Proc.* **2023**, *14*, 6. https://doi.org/10.3390/IOCN2023-14505

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1. Introduction

Ovulatory disorders are a spectrum of conditions that have an impact on a woman's endocrine system and are a major contributor to female infertility. Polycystic ovary syndrome (PCOS) is a hormonal issue that affects women during their reproductive years [1]. Stein and Leventhal are generally acknowledged as the first researchers of polycystic ovarian syndrome; however, in 1721, Vallisneri, an Italian scientist, reported a married, infertile woman with shiny, white-surfaced ovaries the size of pigeon eggs. Formal diagnosis criteria were not offered or generally used until a PCOS meeting sponsored by the National Institutes of Health (NIH) in the early 1990s [2].

The compound currently known as clomiphene citrate was discovered in 1956 by Frank Palopoli and his colleagues in the Merell Chemistry Department at the time. The initial outcomes of clomiphene's human clinical trials—at the time known as MRL-41—were published by Greenblatt et al. (1961) in the Journal of the American Medical Association (JAMA) in October 1961. It was the third drug to be submitted to the United States Food and Drug Administration (USFDA) for review in accordance with the regulations. In 1965,

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Proceeding Paper

An Overview on Management of Psoriasis Using Calcipotriene and Its Amalgamation as Nano Based Drug Delivery System †

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† Presented at the 4th International Online Conference on Nanomaterials, 5–19 May 2023; Available online: https://iocn2023.sciforum.net/.

Abstract: A skin ailment known as psoriasis, which affects 2–5% of people worldwide, is characterised by excessive keratinocyte proliferation and abnormal differentiation. Calcipotriene, a synthetic vitamin D analogue, is the first-line treatment for psoriasis. It may be used in combination with methotrexate, tazarotene, acitretin, cyclosporine, and corticosteroids. It reduces the number of T cells and regulates the inflammatory response in psoriatic lesions. However, the effectiveness of pharmacotherapy based on conventional formulations for treating patients is only partially favourable. Recent developments in nanotechnology-based nanomedicines may allow us to improve the efficacy and safety of pharmacotherapeutic treatments for psoriasis. Enhancing therapeutic efficacy while lowering toxicity through overall dose reduction are two spectacular effects of using nanomedicine as a medication carrier. This novel method efficiently ensures the site-specific administration of medications throughout the skin to treat psoriatic lesions. The present manuscript aims to discuss the chemistry and pharmacology of calcipotriene, conventional pharmacotherapy and contemporary research on calcipotriene, and the combinations of it that are used as nanomedicines for the better management of psoriasis. This review primarily focuses on the nanoemulsion loaded gel of calcipotriene and clobitasol propionate as it offers high drug loading and retention in the skin, improving the local concentration of both drugs and reducing their systemic side effects. Calcipotriene and methotrexate combined in a nanostructured lipid carrier are also the most recent generation of solid lipid nanoparticles, with better drug loading, controlled release, and enhanced bioavailability.

Keywords: psoriasis; calcipotriene; nanomedicine; therapeutic; nanoemulsion

Citation: Tatiya, A.; Patil, J.; Girase, T.; Patil, M.; Patel, K. An Overview on Management of Psoriasis Using Calcipotriene and Its Amalgamation as Nano Based Drug Delivery System. *Mater. Proc.* **2023**, *14*, 38. https://doi.org/10.3390/IOCN2023-14504

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1. Introduction

Psoriasis is a chronic autoimmune inflammatory disease, affecting 2–5% of the world's population, and is characterized by macules and plaques on the skin due to hyperproliferation and abnormal keratinocyte differentiation [1,2]. The primary clinical sign of psoriasis is an erythematous and scaly skin lesion, which is generally located in the joints (elbows, knees) and scalp, but any localization is possible. The pathogenesis of this illness reveals three key characteristics: vascular alterations, keratinocyte proliferation, and aberrant differentiation, Inflammatory cells infiltrate the skin and produce cytokines [3]. Psoriasis patients have higher rates of obesity, cardiovascular disease, non-alcoholic fatty liver disease, diabetes, and metabolic syndrome than the general population. These risks are particularly high in patients with more severe psoriasis. Its origin is currently unknown, but it seems to be triggered by a combination of genetic (family history) and environmental factors (alcohol, tobacco, infections, medications, stress). Psoriasis can be categorised into

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Proceeding Paper

The Surging Function of Nanotechnology in the Management of Primary Biliary Cholangitis with Obeticholic Acid †

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Abstract: Obeticholic acid (OCA), also known as 6alpha-ethyl-3alpha,7alpha-dihydroxy-5-cholon-24-oic acid, is a semi-synthetic derivative of chenodeoxycholic acid (CDCA, 3alpha,7alpha, dihydroxy-5-cholon-24-oic acid), a primary bile acid that is produced in the liver from cholesterol and is comparatively hydrophobic. OCA, a farnesoid X receptor (FXR) agonist, is crucial for the enterohepatic movement of bile acid. OCA has significantly improved biochemical outcomes in preliminary tests in individuals with primary biliary cholangitis (PBC). PBC is an autoimmune disease of the liver characterised by cirrhosis, cholestasis, fibrosis, and destruction and inflammation of the intrahepatic bile ducts; the autoimmune reaction is mostly responsible for this. In order to reduce inflammation, OCA targets the physiological and immunological functions of PBC. Drugs are used in immunological therapy, targeting specific cytokines and chemokines associated with inflammation, as well as immunological molecules involved in B cell and T cell responses. We concentrate on numerous nanotechnology therapeutic modalities for liver illness in this review. Nanomedicine provides a novel strategy that focuses on tolerance induction rather than immunosuppression, offering significant promise for the treatment of autoimmune illnesses. Immune-modifying drugs can be incorporated into tolerogenic nanoparticles to safely and effectively target the antigen-specific immune response in autoimmune disorders. Given the anatomical characteristics and immunological uniqueness of PBC, these may be particularly effective.

Keywords: obeticholic acid; primary biliary cholangitis; autoimmune diseases; nanotechnology; nanomedicine

Citation: Patil, D.; Patil, J.; Patil, M.; Girase, T.; Patel, K. The Surging Function of Nanotechnology in the Management of Primary Biliary Cholangitis with Obeticholic Acid. *Mater. Proc.* **2023**, *14*, 39. https://doi.org/10.3390/IOCN2023-14506

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1. Introduction

Primary biliary cholangitis (PBC) is a chronic autoimmune illness that preferentially affects the interlobular bile channels (cholangitis), causing cholestasis, the retention of bile salts in the liver, and secondary hepatocyte damage. Although the disease can proceed to cirrhosis, liver failure, and death, the onset is frequently silent and sneaky [1]. It is a chronic, autoimmune, slowly progressing liver condition that primarily affects middle-aged women at a ratio of about 10:1 [2]. It has been discovered that genes associated with X-linked immunodeficiencies can cause granuloma formation and elevated immunoglobulin (Ig) M levels, which are frequent observations in PBC. X chromosome monosomy is observed in women with PBC, but the cause of this gender difference is not fully understood [3].

The onset of cirrhosis and its complications, however, play a significant role in the disease's outlook. All patients should begin and continue receiving ursodeoxycholic acid because it is linked to a better prognosis. The clinical outcome of ursodeoxycholic acid is correlated with the biochemical reaction, but patients with incomplete responses still

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Proceeding Paper

Nanoparticles: A Novel Antifungal Drug Delivery System †

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† Presented at the 4th International Online Conference on Nanomaterials, 5–19 May 2023; Available online: https://iocn2023.sciforum.net.

Abstract: Innovative drug delivery systems show how pharmaceuticals are administered to the site of action in order to produce the therapeutic effect. Fungal infections are a problem today on a global scale. There is no medical cover-up in the world regarding the significance of fungi as a human pathogen. According to recent developments, the accurate diagnosis and treatment of these infections are crucial and required. Numerous factors influence the development of modern pharmaceutical products and their methods of administration. For the development of a successful novel antifungal drug delivery system, it is essential to thoroughly investigate the relationships between the formulations, the mode of administration, pharmacological properties, pharmacokinetics, pharmacodynamics, stability, efficacy, safety, and clinical indications. This review article discusses various types of nano techniques used in the delivery of antifungal drugs, including dendrimers, polymeric nanoparticles, inorganic nanoparticles, and nanoparticles based on phospholipids (nano-vesicles). Due to their unique properties, nanoparticles can exert more inhibitory power through lower concentrations than conventional dosages when used in the treatment of fungal infections. Reduced drug efficacy, limited penetration through tissue, poor aqueous solubility, decreased bioavailability, and poor drug pharmacokinetics are among the drawbacks to using antifungal medications in delivery systems. Therefore, the incorporation of antifungal medications through the nanoparticles' drug delivery systems can reduce these undesirable properties.

Keywords: novel drug delivery; antifungal; nanoparticles; nano-vesicles

Citation: Mali, R.; Patil, J. Nanoparticles: A Novel Antifungal Drug Delivery System. *Mater. Proc.* **2023**, *14*, 61. https://doi.org/10.3390/IOCN2023-14513

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1. Introduction

Fungal infections are infections that affect the skin and mucous membranes, or cause more severe, invasive, and systemic diseases of the internal organs. Fungal infections can also affect the lungs and heart [1]. People who have a weak or imbalanced immune system are more likely to get airborne fungal infections. Nanoparticle-based alternative therapies have received significant scientific attention in recent years. By adhering to the fungal cell wall and thereby increasing the drug concentration close to fungi, nano-carriers have the potential to enhance the efficacy of antifungals [2]. Systemic mycosis, superficial mycosis, cutaneous mycosis, and subcutaneous mycosis are the four types of these infections. According to researchers, treating these mycoses would not be possible by relying solely on the antifungal compounds that are currently available. A brand-new antifungal drug that works at the target sites needs to go through a long discovery phase, several clinical trials on humans and animals, development, and regulatory approval before it can be sold [3]. Due to their distinct structural and functional characteristics, advanced topical carriers overcome biopharmaceutical issues such as low bioavailability and poor retention that are associated with conventional drug delivery systems. According to the literature,

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Proceeding Paper

Significance of Ziprasidone Nanoparticles in Psychotic Disorders †

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† Presented at the 4th International Online Conference on Nanomaterials, 5–19 May 2023; Available online: https://iocn2023.sciforum.net/.

Abstract: Nanotechnology is used today in a wide range of industries. Weakly water-soluble medications have better solubility and bioavailability when delivered by nano-specific drug delivery methods, such as nanocrystals. Another name for ziprasidone is 5-[2-[4-(1,2-benzisothiazol-3-yl)-1-piperazinyl]ethyl]-6-chloro-1,3-dihydro-2H-indol-2-one, and it is a brand-new "atypical" or "second-generation" antipsychotic drug. Its multipotent G-protein-coupled (GPCR) receptor binding profile is distinctive. It is used to treat bipolar-disorder-related acute manic or mixed episodes as well as schizophrenia. Schizophrenia is a serious mental condition in which a person can experience reality in a strange or different way. Ziprasidone is a highly lipophilic and unstable drug. Ziprasidone nanoparticles, another incarnation of this drug, are used to treat diseases. When ziprasidone is present in the form of particles with an effective average crystal size of less than or equal to 100 nm, the term "nanoparticle" is frequently used to characterize them. A colloidal submicron dispersion of ziprasidone particles is what ziprasidone nanosuspensions and nanoemulsions are made of. One formulation that makes use of solubilization technology is a nanosuspension of a crystalline ziprasidone free base. In order to get around the drug's solubility issue and investigate its potential for nose-to-brain delivery, a buffered nanoemulsion of ziprasidone HCl has been created. We discuss numerous ziprasidone nanoformulations used to treat psychotic illnesses in this review.

Keywords: ziprasidone; schizophrenia; colloidal dispersion; nanosuspension; nanoemulsion

Citation: Patil, M.; Patil, J.; Patil, D.; Patel, K.; Tatiya, A. Significance of Ziprasidone Nanoparticles in Psychotic Disorders. *Mater. Proc.* **2023**, *14*, 62. https://doi.org/10.3390/IOCN2023-14503

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1. Introduction

Today, nanotechnology is a crucial method for making poorly water-soluble pharmaceuticals more soluble. Because of the increase in surface area and saturation caused by the reduction in these medications' particle sizes to the nanometer range, they can dissolve more quickly and have greater bioavailability [1,2]. About 40% of recently developed medicines have poor water solubility [3]. Drugs' poor bioavailability is due to their poor water solubility [4]. To make weakly water-soluble medications more soluble, there are numerous methods such as using cosolvents, surfactants, and complexing to prepare pharmaceuticals as salts [5]. Additionally, it has been claimed that particle size reduction medicines can make them more soluble [6]. Applications of nanotechnology for pharmacists include medications with active components that are nanoscale in size [7]. As a result of the smaller drug delivery systems, drugs can now be deposited in previously inaccessible body parts, which has relevance in the identification and treatment of specific illnesses such as cancer. Target therapy and advancements in medical devices and diagnostic tests are new discoveries in medication delivery [8]. The science underlying nanotechnology is still in its infancy, which raises certain concerns about these advancements.

Proceeding Paper

Nanomaterials: An Improvised Drug Delivery System through the Gastroretentive Drug Delivery System †

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† Presented at the 4th International Online Conference on Nanomaterials, 5–19 May 2023; Available online: https://iocn2023.sciforum.net.

Abstract: Oral drug administration is among the most popular options in terms of patient compliance. The absorption window's influence enables the majority of commercially available modified-release dosage forms to have the desired physiological impact. In order to achieve the desired activity against the body's challenges, the formulator must keep the dosage form in the stomach, which is the aim of gastroretentive drug delivery (GRDD). In this process of maintaining the gastrointestinal (GI) tract, influenced by the nature of excipients and driven by the type of formulation to achieve therapeutic goals, a GRDD system is comparable to an improvised CDDS (control drug delivery system) before it reaches the absorption site. The most prevalent kind of preferred modified release system in use is solid oral dosage forms. To achieve the desired release profile, fewer doses are required when using these forms. Each drug candidate has a unique GIT absorption window, so there are many challenges. Solvability characteristics, pH-dependent variables, stability, physiological region, etc. Due to the barriers that have been added to this system, many products have been created. This review article contains nanomaterials used in GRDDS as novel drug delivery, factors affecting, and challenges to formulate nanomaterials, evaluation and advance technology used for application of nanomaterials.

Keywords: nanomaterials; GRDDS; control drug delivery; GI tract; advance technology

Citation: Mali, R.; Patil, J. Nanomaterials: An Improvised Drug Delivery System through the Gastroretentive Drug Delivery System. *Mater. Proc.* **2023**, *14*, 63. https://doi.org/10.3390/IOCN2023-14514

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1. Introduction

Drug delivery via the oral route is one of the most preferred routes in terms of patient compliance compared to other routes. The absorption window is the influential parameter due to which most commercially available modified-release dosage forms act in this physiological region for their desired effect [1]. The body's gastrointestinal (GI) tract is where most drugs are administered. Simple medication administration for compliance therapy, a broad surface area for systemic absorption, and the adaptability of the GI tract to handle various food types are all advantages. The benefits of the GI tract in medicine distribution include a variety of formulations [2]. This route suffers from a number of physiological issues, including erratic gastric emptying, a short GI transit time (80–12 h), and a drug absorption window in the upper small intestine. Efforts are being made to address these issues, and a novel drug delivery mechanism is required [3].

The gastroretentive drug delivery system (GRDDS) aims to hold the dosage form in the stomach to attain the desired activity by the formulator against the challenges involved with the body [4]. As an improvised CDDS (control drug delivery system), before reaching its site of absorption as compared to conventional drug delivery, the GRDDS comparably prevails in this process of sustaining in the GI tract, influenced by the nature of excipients and driven by the type of formulation to attain therapeutic goals. Solid oral dosage forms

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International Journal of Pharma Research and Technology

Development and Validation of UV-Spectrophotometric and RP-UHPLC Method for the Determination of Clomiphene Citrate in Bulk Drug and Tablet Dosage Form

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Abstract

In this study, we explore the potential of clomiphene citrate, a selective estrogen receptor modulator (SERM) and ovulatory stimulant, by developing UV-Spectrophotometric and RP-UHPLC methods. These innovative techniques offer precise and reliable means of determining clomiphene citrate levels in both bulk drug and tablet formulations. UV-Spectrophotometric method was developed employing Analytical Technology Limited and to achieve exceptional chromatographic separation of components, we employed an advanced Agilent tech. gradient system equipped with an auto-injector and DAD detector. A Reverse Phase C18 (100 mm x 4.6mm; 2.5µm) column served as the stationary phase, while a unique mobile phase consisting of methanol and 0.1% OPA water (50:50% v/v) further enhanced the efficiency. In adherence to the rigorous guidelines of the International Conference on Harmonization (ICH), we thoroughly validated both the UV and RP-UHPLC methods. The UV-Spectrophotometric analysis of clomiphene citrate reveals an astonishing maximum absorbance at 234nm, utilizing water: methanol (90:10) solvent blend. The entire process of RP-UHPC with a flow rate of 1.0ml/min meticulously monitored the absorbance at 234nm, successfully eluting clomiphene citrate at an astonishingly rapid rate of 2.9 minutes. The validation parameters, including linearity, accuracy, precision, system suitability, detection limit, quantitation limit, robustness, and ruggedness, all demonstrated exceptional performance, well within the acceptance limits. For the UV method, a remarkable linearity range emerged, spanning concentrations from 5-25µg/ml, boasting an impressive R^2 value of 0.9998. Meanwhile, the RP-UHPLC method exhibited a linearity range from 2.5-12.5µg/ml, showcasing an astounding R^2 value of 0.9991.This developed method revolutionizes the determination and quantification of clomiphene citrate in bulk drug and tablet formulations. The remarkable precision and reliability of our UV-Spectrophotometric and RP-UHPLC methods promise to elevate the understanding and application of clomiphene citrate to unprecedented heights.

Keywords: UV-Spectrophotometric, RP-UHPLC, Clomiphene citrate, Tablet

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Development and Validation of UV-Spectroscopy and UHPLC Method for Gemfibrozil in Bulk Drug and Pharmaceutical Dosage Form

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Abstract

The present study attempts to validate the approach by UV-Spectroscopy at a wavelength of 273nm. The UHPLC separation was performed using reversed phase chromatography on a C18 column (100mmX4.6mm, 2.5m) in gradient mode at a flow rate of 1.0 mL min. At a wavelength of 273nm, diode array detection was performed using a mobile phase composed of a 50:50 (v/v) mixture of methanol and water (0.1% acetic acid).The technique for Gemfibrozil was linear in the concentration range of 5 - 25 g/ml, with a correlation coefficient of 0.9991. For Gemfibrozil, the limit of detection was 0.1058 g/ml. The limit of quantification for Gemfibrozil was 0.3208 g/ml. The analyte recovers at a rate of 98%-102% on average. The approach was found to be accurate, precise, specific, linear calibration curve, and resilient for both pure and pharmaceutical dosage forms. The method was validated in terms of linearity, recovery, accuracy, specificity, LOD/LOQ values, and solution stability, and it was effectively employed for Gemfibrozil determination. For Gemfibrozil, a simple, precise, accurate, and fast ultra high-performance liquid chromatographic (UHPLC) method has been designed and validated.

Keywords: Gemfibrozil; Method development; Validation; UHPLC; UV Spectroscopy

Introduction

Gemfibrozil, often known as "lopid" in the pharmacy, is a fibrate medicine licenced by the FDA that is structurally an amphipathic carboxylic acid molecule.[1] Gemfibrozil was successfully launched to the market in 1976 as a hypolipidemic medication with a significant ability to lower plasma triglyceride levels.[2]

Gemfibrozil [GEM] is a 5-[2, 5-dimethylphenoxy]-2, 2-dimethylpentanoic acid. The medication is used to treat hyperlipidemia. Gemfibrozil is a lipid-regulating drug that lowers serum triglycerides and very low density lipoprotein [VLDL] cholesterol while increasing high density lipoprotein [HDL] cholesterol.[3] Gemfibrozil stimulates extrahepatic lipoprotein lipase (LL) activity, resulting in increased lipoprotein triglyceride lipolysis. It accomplishes this by activating the transcription factor ligand

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Development and Validation of UV-Spectrophotometric and Stability Indicating RP-HPLC Method of Calcipotriene in Bulk Drug and Pharmaceutical Formulation

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Abstract

The objective of current study was to develop and validate stability indicating UV Spectrophotometric and RP-HPLC method for Calcipotriene in bulk drug and pharmaceutical formulation. UV Spectrophotometric method was developed utilizing Analytical Technologies limited. Detection was carried out at absorption maxima at 260nm using methanol as a solvent. Beer's law was followed in the concentration range of 5-25 µg/mL, and the drug was quantitated using A1% 1cm at 260 nm, which produced a correlation coefficient that was less than 1. The Chromatographic separation of analyte was achieved on Agilent C18 (4.6mm x 250mm, 5µm) column with mobile phase consisting of Methanol and 0.1 % Acetic Acid in the ratio of 65:35% v/v at flow rate of 1.0 ml/min. The retention time was found to be 5.273 min. Calcipotriene was subjected to forced degradation studies under different stress conditions like acid hydrolysis, alkaline hydrolysis, and hydrogen peroxide oxidation. The developed method was validated according to the guidelines of International Conference on Harmonization (ICH) for various parameters like linearity, precision, accuracy, robustness, limit of detection and limit of quantitation. The findings showed that the method performed well in accordance with the standards. The proposed method is simple, accurate, precise, economic, reproducible and stability indicating and hence suitable for routine quality control analysis of Calcipotriene in bulk drug as well as in formulations.

Keywords: Calcipotriene, RP-HPLC, Validation, Stability, Accuracy

Introduction

A chronic autoimmune inflammatory illness that affects 2-5% of the world's population, psoriasis is distinguished by macules and plaques on the skin as a result of hyperproliferation and aberrant keratinocytes differentiation.[1, 2] The first line therapy for

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Analytical Method Development and Validation of UHPLC and UV Spectroscopy for the Determination of Obeticholic acid in Bulk and Pharmaceutical Dosage Form

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Abstract

Quantitative determination of obeticholic acid is simple, quick, sensitive, accurate, precise, and robust. Using a C18 column (4.6mm X 100mm) as the stationary phase, 0.05% OPA (pH 3.7), and Methanol: water (0.05% OPA) 50:50 as the mobile phase, chromatographic separation has been performed at a flow rate of 0.7 ml. The wavelength used for UV detection was 210 nm. Linearity, accuracy, range, and robustness were all within acceptable bounds as per the ICH criteria. The determination of Obeticholic acid performed. The Obeticholic acid to provide well retained, sharp and symmetric peak at3.859 min and 1.435 min. The mean % recovery for in accuracy study was observed to be 98-102%. LOD and LOQ values were found to be 0.0147 µg/mL and 1.3930 µg/mL, respectively. The UHPLC method linear detector response was found to be linear over the concentration range of 10-50µg /ml, with a correlation coefficient of 0.999 and a regression equation of y=14.07x+4.764 and UV method of 1-5µg /ml, with a correlation coefficient of 0.999 and a regression equation of y= 0.085x+0. 012.The intermediated precision study was determined using intra-day and inter-day data Received from the proposed method of evaluating Obeticholic acid. Repeatability studies on UHPLC and UV method for Obeticholic acid was found to be, The %RSD was less than 2%, which shows high percentage amount found in between 98% to 102% indicates the analytical method that concluded. Intraday and Inter day Precision studies on UHPLC and UV method for Obeticholic acid which shows the high precision %amount in between 98% to 100% indicates to analytical method that concluded. The robustness of Obeticholic acid changes were did flow rate (±1 ml/ min-1), PH of mobile phase composition (±1 ml/ min-1), and Wavelength (±1 ml/ min-1). %RSD for peak area was calculated which should be less than 2%. The mean % recovery for in accuracy study was observed to be 98-102%. LOD and LOQ values were found to be 0.0147 µg/mL and 1.3930 µg/mL, respectively. The ICH guideline for the validation of analytical recommended UHPLC,UV analytical method for the quantitative determination of Obeticholic acid is simple, quick, sensitive, accurate, precise, and robust. The findings of all validation parameters are well within the acceptable requirements set by the guideline.

Keywords: UHPLC, UV Spectroscopy, Obeticholic acid, validation method.

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International Journal of Pharma Research and Technology

Stability Indicating Method Development and Validation of Ziprasidone by using RP-HPLC Method

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Abstract

A new simple, sensitive and stability indicating RP-HPLC method for the determination of Ziprasidone in pharmaceutical dosage form was developed. Chromatographic separation was carried on Reverse Phase C18 (Cosmosil) column (symmetry 250x4.6mm;5µm) with a mobile phase composed of acetonitrile and 0.05% (OPA) water (90:10 v/v) having pH 3.0 at an absorption maxima 318nm. The analysis of the drug was carried out on Agilent Tech. Gradient System with Auto injector DAD Detector. Equipped with Reverse Phase C18 (Cosmosil) with 250 mm x 4.6; (5µm), a SP930D pump, a 20 µl injection loop and DAD Absorbance detector and running chem station software. Linearity for detector response was observed in the concentration range of 80-120% of test concentration. The correlation coefficient of the method shows good linear relationship with 0.9996. Retention time was found to be 4.3 min. The % recovery of Ziprasidone is between 97- 101%. The %RSD for the tablet analysis is less than 2 which is indicating high degree of precision. The limit of detection and quantification are determined for Ziprasidone 0.1722 µg/ml and 0.5218 µg/ml. Drug product was exposed to acid, base, oxidation and neutral conditions and the samples were analyzed by the proposed validated method. Results of the analysis were validated statistically and by recovery studies. The developed method was found to be precise for the determination of Ziprasidone in bulk dosage form. The chromatographic method validation of Ziprasidone was simple, reliable, sensitive and less time consuming. This method may be recommended for routine and quality control analysis of the investigated drug. The developed method is specific and stability indicating. Hence this method is suitable, linear, accurate & robust for the estimation of Ziprasidone

Keywords: Stability indicating, RP-HPLC, Ziprasidone, Cosmosil, dosage form.

Introduction

Ziprasidone is chemically 5-[2-[4-(1,2-benzisothiazol-3-yl)-1-piperazinyl] ethyl]-6-chloro-1,3-dihydro-2H-indol-2-one and the structural formula is as shown in Fig

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International Journal of Pharma Research and Technology

Review on Pharmaceutical Inventory Model

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Abstract

An essential function in the pharmaceutical sector is played by the inventory management system. Whether a business is little or large, domestic or worldwide, inventory management is crucial for all of them. Since the raw materials in a pharmaceutical company have an expiration date, it's critical to establish a minimum safety stock for such things. Most businesses strive to maintain a minimal inventory of goods, as this makes easy business tracking possible. The provision of proper care and treatment to patients is the ultimate purpose of healthcare systems. Pharmaceutical Supply Chain in the healthcare system must be functional and efficient in order to achieve it. In this article, we provide an overview of the Pharmaceutical Inventory literature that has been published from the beginning of 1968. The models that have been made available in the pertinent literature have been appropriately categorized. Each subclass's numerous models' reasons and extensions have been thoroughly examined.

Keywords: Inventory, Perishable items, Pharmaceutical inventory, RFID technology, Drug inventory, Blood inventory, Hospital inventory.

Introduction

Pharmaceutical is a very sensitive and important sector that deals with both human and animal life. In this industry, purity is highly regarded. The most crucial aspects to maintain are quality, security, and identification. Inventory refers to the stock of pharmaceutical products kept on hand in order to fulfil future demand in pharmacy operations. The inventory is the pharmacy's most valuable asset, and its value is increasing due to the increased variety and expense of pharmaceutical items. Inventory management is critical in pharmacy from both a financial and operational standpoint. From a financial standpoint, efficient inventory management increases gross and net profits by lowering the cost of acquired pharmaceutical products and associated operational expenses in inventory. There are three kinds of charges involved. The procurement costs are the expenses incurred when procuring things, such as placing and receiving orders, stocking, and paying invoices. Carrying costs are costs associated with product storage, which include costs incurred as a result of crises. The shortfall costs, also known as stock-out costs, are the costs of not having the product available when it is required. There are two primary aims in maintaining a pharmacy's inventory. The first is to ensure that medications are available when patients require them, and the second is to keep medication expenses to a minimal. Proper stock management, such as utilizing prescriptions before they

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Review on Nanorobot as a Nanomachine and Biomedicine

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Abstract

Nanorobotics is the technology of producing robots or machines with very small scale or Miniscale of a nanometer (10-9 meters), machines constructed at the molecular level (Nano machines) may Be used to detect or identify and cure the human body of its various diseases like cancer. Nano robots are Very good accuracy they perform a specific task with great accuracy and precision at very small scale or Nanoscale dimension. A recent discovery in the field of drug Delivery is target therapy, which improves the diagnostic tests and Medical devices. Nanotechnology is going to revolutionize the world. According to the National Nanotechnology Initiative (NNI). Nowadays these nano robots play a vital role in the field of Bio Medicine. In the pharma-world, the applications of Nanotechnology mean drugs containing nano-sized active ingredients. They are well used to cure HIV, Cancer, Surgery, Bloodstream, gene therapy, Kidney stone removal and other harmful disease they Can restore lost tissue at the cellular level, useful for monitoring, Diagnosing and fighting sickness. The main purpose is to cure many dreadful Diseases in human body.

Keywords-Nanotechnology, Nanorobot, Nanomachine, Biomedicine

Introduction

Nanotechnology can best be defined as a description of activities at the level of atoms and molecules that have applications in the real world. A nanometer is a billionth of a meter, that is, about 1/80,000 the diameter of a human hair, or 10 times the diameter of a hydrogen atom. The size-related challenge is the Ability to measure, manipulate and assemble matter with features on the scale of 1-100 nm. In order to achieve cost-effectiveness in nanotechnology it will be necessary automate molecular manufacturing.

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Research RRJoPS

Sumatriptan Succinate Mucoadhesive Buccal Tablets: Formulation Design, Optimization and Evaluation

T.D. Sonawane[1,2,*], S.P. Pawar[3]

Abstract

The main aim of present investigation was to develop and study mucoadhesive buccal tablets of sumatriptan succinate using different bioadhesive polymer. Nine formulations were prepared by using direct compression method with varying concentration of polymer as HPMC (Metolose SR 90SH-15000), xanthan gum (XTGM) and sodium carboxy methyl cellulose (sodium CMC). Fourier transform infrared spectroscopy was used to identify drug excipient interaction. Micromeritic properties of lubricated blend, physical properties and chemical evaluation of compressed tablet was performed and found satisfactory. The optimized formulation F8 containing HPMC (Metolose SR 90SH-15000) and xanthan gum (1:2) and in vitro drug release study showed sustained drug released for 9 Hours. Optimization study was performed by using design of experiment (DoE). In vitro drug release study data revealed that combination of Metolose SR 90SH-15000 (30 mg) and Xanthan Gum (60 mg) along with diluent dibasic calcium phosphate (41 mg) shown desired drug release profile with sustained manner. The approach describes the efficiency of bioadhesive polymer to adhere the mucous lining and prolong the drug release. Backing layer of ethyl cellulose (EC) was used to provide unidirectional drug release. The in vitro release kinetics reveals that formulation follows Korsmeyer–Peppas model. Optimized formulation was stable for1 month accelerated stability condition at 40°C and 75% RH.

Keywords: Migraine, buccal mucoadhesion, swelling index, release kinetics, QbD, bioadhesive

INTRODUCTION

Drug delivery though oral route is most common, convenient, and easiest route of drug administration. Patient's compliance for oral administration is more comparing with other route [1]. There are few drawbacks associated with oral route of drug administration. Enzymatic degradation and first pass metabolism of drug in gastrointestinal tract (GIT) [2, 3]. Buccal delivery is used to overcome the deficiency associated with oral route, mucoadhesive buccal system comes in demand. Buccal mucoadhesive tablet become moist when kept at mucosal lining of buccal mucosa and get hydrated and shows drug release in sustained manner for prolong period [4, 5]. The buccal and sublingual route of drug administration can be used to sidestep the hepatic disposal of medication, buccal mucosa has a rich blood supply, and it is moderately penetrated [6]. In transmucosal drug delivery system has advantage of bypass the metabolism of drug in liver and not GI side effect. [7]. Mucoadhesive drug delivery system includes buccal, oral, ocular, vaginal and rectal site of delivery system [8, 9]. Bioadhesive drug delivery through oral route is divided into sublingual, buccal, local route of drug administration [10]. Buccal bioadhesive tablets get moistened due to saliva when placed in contact with buccal mucosa [11].

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Formulation and Process Optimization of polymeric microsphere formulation of Glibenclamide using solvent evaporation technique

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ABSTRACT:

Glibenclamide, a second generation sulphonyl urea, is to be more efficacious than first generation medications.A common oral anti-diabetic drug used to treat non-insulin-dependent diabetes mellitus is Glibenclamide. As a result of its 4-6 hour biological half-life, it needs to be administered more than once to maintain plasma concentration. This results in discomfort for the patient and changes in plasma medication concentration, which may result in diminished therapeutic effects or harmful effects.

With the aid of the solvent evaporation microencapsulation process, controlled release microspheres and PLGA polymer have been prepared. Effects of preparation conditions, drug: polymer ratio (X_1), concentration of poly (vinyl alcohol) (PVA) in aqueous phase (X_2), homogenization speed (X_3) upon the properties of PLGA microspheres containing Glibenclamide were examined. The most effective formulation was derived utilising response surface methodology and optimised polynomial equations. The microspheres were characterized for particle size distribution (PSD), surface morphology, drug excipient compatibility, drug entrapment, and *in vitro* drug release.

The antidiabetic effect of polymeric microsphere formulation of Glibenclamide demonstrated using Alloxan-induced diabetes mellitus model in rats. Glibenclamide microsphere formulation consistently reduced blood sugar levels up to the ninth day, indicating that drug release from the microsphere formulation was controlled up to the ninth day. Based on the findings, it is possible to conclude that Glibenclamide microsphere formulation has an anti-diabetic effect when administered intramuscularly. According to the results, a single dose of 'Glibenclamide microsphere formulation' normalised blood sugar levels in rats.

Keywords: Glibenclamide, microsphere, diabetes mellitus, blood glucose, alloxan

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ORIGINAL ARTICLE **OPEN ACCESS**

Demonstrate the antidiabetic effect of polymeric microsphere formulation of Glibenclamide using Alloxan-induced diabetes mellitus model in rats

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ABSTRACT

The purpose of this study was to provide information on the effect of Glibenclamide microsphere formulation and to investigate the therapeutic effect in Sprague–Dawley (SD) rats. The test item formulation was administered as a single dose intramuscularly. SD rats were divided randomly and assigned to one of five subgroups. A single dose of Alloxan was used to induce diabetes in rats. The determination of blood glucose level after 48 hours confirmed diabetes. Blood glucose levels were measured up to 9 days after the test compound, standard drug and drug solution were administered in a single dose to each treatment group. Glibenclamide microsphere formulation group significantly reduced blood sugar levels from the fourth hour to the ninth day after formulation administration. Glibenclamide microsphere formulation consistently reduced blood sugar levels up to the ninth day, indicating that drug release from the microsphere formulation was controlled up to the ninth day. Based on the findings, it is possible to conclude that Glibenclamide microsphere formulation has an anti-diabetic effect when administered intramuscularly. According to the results, a single dose of 'Glibenclamide microsphere formulation' normalised blood sugar levels in rats.

Keywords: *Glibenclamide, alloxan, blood glucose, diabetes mellitus, microsphere.*

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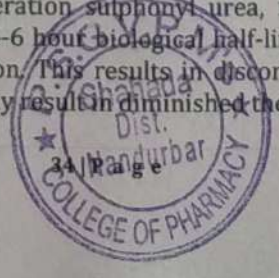
INTRODUCTION

The novel drug delivery has drawn more attention in recent years. Polymeric systems include drugs for controlled and targeted medication release. [1] The release of drugs from these systems should be predictable, consistent, and at the desired rate. [2] There are various controlled release formulations available in tablet form, but over time, the Microsphere formulations have gained tremendous appeal since they outperform the others in many ways. The need for long-term treatments of chronic illnesses prompted the widespread development of long-acting parenteral formulations (LAPFs), with the aim of improving medication pharmacokinetics and therapeutic efficacy. [3] LAPFs have been shown to increase patient adherence and to lengthen the half-life of medicines, both of which improve treatment outcomes. [3]

Diabetes mellitus (DM) is one of the world's most significant health issues at the moment. [4] It has been documented that the diabetes prevalence is steadily increasing, and that 6.4% of individuals in the world suffer diabetes, with 285 million persons estimated to have the disease in 2010 and perhaps 439 million by 2030. In developing countries, the prevalence of adult diabetes will rise by 69% between 2010 and 2030, while it will rise by 20% in wealthy nations. [5] By 2030, diabetes will be the seventh for the most common cause of death, according to WHO forecasts. [6]

The pancreas produces insulin, which is the main hormone responsible for elevated blood sugar levels used as a type of protection. In type 2 diabetes, insulin is not produced enough in response to spikes in blood sugar, such as those that occur after meals. Glibenclamide is a widely used oral anti-diabetic medication for the treatment of non-insulin-dependent diabetes mellitus (type II). It primarily stimulates the pancreatic beta cells, which are responsible for producing insulin. The beta cells begin to produce more insulin as a result. Hence, people with type 2 diabetes benefits from a reduction in blood sugar levels.

The goal of Glibenclamide, a second generation sulphonyl urea, is to be more efficacious than first generation medications. As a result of its 4-6 hour biological half-life, it needs to be administered more than once to maintain plasma concentration. This results in discomfort for the patient and changes in plasma medication concentration, which may result in diminished therapeutic effects or harmful effects.



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