Criteria: 3

3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year 2023-2024

Title of paper	Name of the author/s	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
QbD Based Analytical Method Development & Validation for the Estimation of Remogliflozine & Vildagliptin in Bulk & in Their Dosage Form	Mr. Darade R.B.	Journal of Chemical health Risks	08/04/2024	2251-6227	
Overview of Regulatory Guidelines For Stability Study of Pharmaceuticals: Review	Mr. Darade R.B.	Journal of Chemical health Risks	03/005/2024	2251-6227	
Indian Pharmaceutical Regulatory Authority: Review	Mr. Darade R.B.	Journal of Chemical health Risks	21/05/2024	2251-6227	
Formulation and Evaluation of Floating Drug Delivery System for the Treatment of H. Pylori Using Carvacrol	Dr. Amol U. Gayke	Journal of Chemical health Risks	04/08/2024	2251-6227	

Formulation and Evaluation of Allicin Loaded Nanosponges	**Dr. Amol U. Gayke**	**NATURALISTA CAMPANO**	**04/08/2024**	**1827-7160**	
Formulation and Development of Controlled Released Ocular Insert	**Dr. Amol U. Gayke**	**Journal of Chemical health Risks**	**08/04/2024**	**2251-6227**	
Formulation and Evaluation of Divalproex Sodium Bi-Layered Tablet for the Treatment of Epilepsy	**Dr. Amol U. Gayke**	**Journal of Chemical health Risks**	**18/06/2024**	**2251-6227**	
Formulation and Evaluation of Ciprofloxacin Dental Paste for Treatment on Peridontitis	**Dr. Amol U. Gayke**	**NATURALISTA CAMPANO**		**1827-7160**	
Formulation and Evaluation of Pulsatile Drug Delivery for Nocturnal Acid Breakthrough Using Famotidine	**Dr. Amol U. Gayke**	**NATURALISTA CAMPANO**	**2024**	**1827-7160**	
Exploring 1,3,4-Oxadiazole Derivatives as Potent α-Amylase Inhibitors: Design, Synthesis, and Biological Evaluation	**Sonali A. Waghmare**	**Eurasian Journal of Chemistry**	**2024**	**2959-0663**	
Formulation & Evaluation of Herbal Mouthwash	**Mrs. Kavita S. Sharma**	**International Research Journal of Modernizatio in Engieering Technology & Science**	**18/05/2024**	**2582-5208**	

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Formulation & Characterization of Novel Pigmenting Herbal Facial Serum Incorporated with Saffron & Lemon Oil	**Mrs. Kavita S. Sharma**	**European Journal of Pharmaceutical & Medical Research**	**18/06/2024**	**2394-3211**	

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QbD Based Analytical Method Development and Validation for the Estimation of Remogliflozin etabonate and Vildagliptin in Bulk and in Their Dosage Form

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(Received: 08 February 2024 Revised: 11 March 2024 Accepted: 06 April 2024)

KEYWORDS
Quality by design, HPLC, Remogliflozin etabonate, Vildagliptin, Box Behnken Design.

ABSTRACT:

Introduction: QbD based simple, accurate, precise, sensitive, economic and robust RP-HPLC method was successfully developed and validated for the simultaneous estimation of Remogliflozin etabonate and Vildagliptin in bulk and in tablet dosage forms. Linearity, detection limit, quantitation limit, accuracy, precision, robustness was considered for development and validation of HPLC method for Remogliflozin etabonate (RMO) and Vildagliptin (VLD) in bulk and in tablet dosage form.

Objectives: The objective of present research work is to apply Quality by Design (QbD) approach for developing a simple, economic, accurate, precise and reproducible analytical method and validate the performance methods as per ICH guidelines by using chromatographic technique (RP HPLC).

Methods: Reversed phase chromatography was carried out by using High Performance Liquid Chromatographic System (Analytical Technologies ltd, HPLC 3000 series) equipped with UV detector controlled by HPLC workstation software, using Cosmosil C 18 (250 mm x 4.6 mm; 5µm) HPLC Column. The chromatographic separation was carried out using mobile phase comprised of 10 mM KH_2PO_4 buffer pH 3 and methanol (10:90 %v/v) with flow rate 0.8 ml/min and response recorded by UV detector at 216 nm. Design expert used as software for evaluation of experimental design study (Stat-Ease Inc., Minneapolis, USA, Version 13.0). Due to high competence with a limited number of runs, Box Behnken Design (BBD) and response surface methodology model is used for present study. Three factors, two levels and five center points are selected for BBD, leads to 17 experimental runs, which were carried out. Standard and sample prepared and injected in to chromatographic system. Retention time, theoretical plates, and peak asymmetry, peak area, resolution were measured as responses. For coefficients and nature of the robustness was evaluated by ANOVA.

Results: Data of ANOVA analysis for selected responses, having P value less than 0.05 and F value more than 2.5 signifies the results of proposed approach. Also, the % RSD values were less than 2.0 for method repeatability and intermediate precision results, indicating high degree of precision of the method. The detection limits and quantitation limits were very low, which is indicate method is sensitive.

Conclusion: Experiments were conducted in HPLC and peak resolution was evaluated. All three variables selected found critical for peak separation. QbD based RP-HPLC methods for simultaneous estimation of Remogliflozin etabonate and Vildagliptin was developed and validated as per ICH guidelines. Experimental results proved that the HPLC methods are linear in the proposed working concentration range as well as specific, sensitive, accurate, precise and robust. The percent recovery results of dosage forms showing that the excipients have no interference in the determination. The proposed method can be applied to the routine analysis of Remogliflozin etabonate and Vildagliptin in quality control department of pharmaceutical industry.

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Review Article

Overview of Regulatory Guidelines for Stability study of Pharmaceuticals: Review

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ABSTRACT

The safety, efficacy and quality of a pharmaceutical product plays a crucial role in product development, stability study ensures the following about the product. Shelf life of a product is consider for its acceptance and approval. These stability studies are conducted by following guidelines issued by international regulatory agencies such as ICH, WHO etc. These guidelines provide a plan to conduct the stability study, various methods are involved in performing stability studies. The environment plays an important role in quality of a product, the stability studies helps to retain product specified limits throughout its period of storage and use. Which helps in determined its shelf life. In this overview the guidelines and trends of stability testing are briefly described.

INTRODUCTION

Stability is an essential criterion for confirming quality and approval of the various manufactured preparations. Pharmaceutical industries depend upon the information on stability studies to assign shelf-life for the formulation manufactured and distributed for the purpose of marketing and also to make sure of the potency and safety of the drugs. Stability studies of drugs revolves around various details pertaining to the research and development process, such as preparation of formulation, performing analytical studies on it, and its quality check-and all of these have great influence on the regulatory aspects, starting from the synthesis of drug to formulation of the drug, its approval and marketing. Stability studies should be carried out on all the batches of a product and on various aspects. The data obtained should be satisfactory enough to fulfil all the parameters till the end of its shelf-life or expiry period, and thus becomes capable to be approved and registered by the regulatory bodies. In order to make certain that good products are prepared, which may be potent enough to last till their shelf life time, marketed

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Review Article

Indian Pharmaceutical Regulatory Authority: Review

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DCGI, Cosmetic, Act, Rules, License, Authority
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ABSTRACT

Central Drug Standard Control Organization is Regulatory Authority in India. CDSCO is responsible for conducting Clinical trials for new drug and provide approval to the new drug. CDSCO also monitors the Rules and Regulation regarding various medicinal practices in India. Functions of CDSCO include ensuring the quality of drugs, Medical Devices and cosmetics sold in the country, approval of new drugs and regulating clinical trials.

INTRODUCTION

The Central Drugs Standard Control Organisation (CDSCO) under Directorate General of Health Services, Ministry of Health & Family Welfare, Government of India is the National Regulatory Authority (NRA) of India. Its headquarter is located at FDA Bhawan, Kotla Road, New Delhi 110002 and also has six zonal offices, four sub zonal offices, thirteen Port offices and seven laboratories spread across the country. The Drugs & Cosmetics Act,1940 and rules 1945 have entrusted various responsibilities to central & state regulators for regulation of drugs & cosmetics. It envisages uniform implementation of the provisions of the Act & Rules made there under for ensuring the safety, rights and well being of the patients by regulating the drugs and cosmetics. CDSCO is constantly thriving upon to bring out transparency, accountability and uniformity in its services in order to ensure safety, efficacy and quality of the medical product manufactured, imported and distributed in the country. Under the Drugs and Cosmetics Act, CDSCO is responsible for approval of New Drugs, Conduct of Clinical Trials, laying down the standards for Drugs, control over the quality of imported Drugs in the country and coordination of the activities of State Drug Control Organizations by providing expert advice with a view of bring about the uniformity in the enforcement of the Drugs and Cosmetics

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Formulation and Evaluation of Floating Drug Delivery System for the Treatment of H. Pylori Using Carvacrol

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KEYWORDS

H. pylori, Carvacrol, floating drug delivery system, FDDS

ABSTRACT:

Helicobacter pylori (H. pylori) infection is a prevalent and challenging condition often associated with peptic ulcers and gastric malignancies. Traditional antibiotic treatments face limitations due to antibiotic resistance and suboptimal drug delivery to the gastric mucosa. This study aims to formulate and evaluate a floating drug delivery system (FDDS) incorporating carvacrol, a potent antimicrobial agent with activity against H. pylori, to enhance localized drug action in the stomach. The FDDS was developed using an effervescent approach, incorporating gas-generating agents and hydrocolloids to achieve buoyancy. Carvacrol was selected for its broad-spectrum antimicrobial properties and ability to disrupt H. pylori biofilms. The formulation was optimized through a series of pre-formulation studies to determine the ideal polymer concentrations and ratios, ensuring optimal floatation and sustained drug release.

Characterization of the FDDS involved evaluating its buoyancy, drug release profile, and antimicrobial efficacy. In vitro buoyancy tests demonstrated that the optimized formulation remained buoyant for over 12 hours, providing prolonged gastric retention. Drug release studies using simulated gastric fluid indicated a sustained release of carvacrol over 8 hours, aligning with therapeutic needs for H. pylori eradication. Antimicrobial testing against H. pylori strains confirmed the formulation's efficacy, showing significant inhibition of bacterial growth and biofilm formation. The developed FDDS exhibited excellent potential for targeted therapy against H. pylori, offering prolonged drug residence time in the stomach and sustained antimicrobial action. These findings suggest that carvacrol-based floating drug delivery systems could represent a promising alternative to conventional H. pylori treatments, potentially improving patient outcomes and reducing the prevalence of antibiotic resistance. Further in vivo studies and clinical trials are warranted to confirm these promising results and assess the long-term benefits and safety of this novel therapeutic approach.

Introduction

In the realm of pharmaceutical sciences, the development of efficient drug delivery systems is paramount to enhancing therapeutic efficacy and patient compliance. Among the innovative approaches, Gastric Floating Drug Delivery Systems (GFDDS) have garnered significant attention. [1] GFDDS are designed to prolong the gastric residence time of drugs, ensuring a sustained release in the stomach. This strategy is particularly beneficial for medications that are absorbed

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Formulation and Evaluation of Allicin Loaded Nanosponges

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Abstract: Background: Fungal infections pose a significant health concern due to their prevalence and increasing resistance to conventional antifungal agents. Allicin, a sulfur-containing compound derived from garlic, exhibits potent antifungal properties. This study aimed to develop a nanosponge-loaded gel formulation of allicin for topical application to enhance its stability and efficacy. **Methods**: Allicin-loaded nanosponges were prepared using a crosslinking method, and the resulting formulation was characterized for particle size, zeta potential, and entrapment efficiency. Solubility analysis was conducted in various solvents, and the thermal behavior was assessed using Differential Scanning Calorimetry (DSC). Fourier Transform Infrared Spectroscopy (FTIR) was employed to investigate drug-excipient interactions. Optimization of the formulation was performed using a central composite design. In-vitro release studies and antifungal activity assays were conducted to evaluate the formulation's performance. **Results**: The optimized formulation, PF7, exhibited a particle size of 273.5 nm, zeta potential of -15.3 mV, and entrapment efficiency of 82.4%. Allicin showed higher solubility in ethanol (9.83±0.67 mg/mL) compared to water (5.89±0.77 µg/mL). FTIR and DSC analyses confirmed the stability and compatibility of allicin with the excipients. The in-vitro release studies demonstrated a controlled release profile with PF7 achieving 95.57% release over 12 hours. The nanosponge-loaded gel (GF) showed substantial antifungal activity with inhibition zones of 23.5±0.87 mm against Candida albicans and 24.4±1.23 mm against Aspergillus niger, comparable to the marketed standard. **Conclusion**: The nanosponge-loaded gel formulation of allicin demonstrated enhanced stability, controlled release, and effective antifungal activity, presenting a promising alternative for the treatment of topical fungal infections.

Keywords: Allicin, Nanosponges, Topical gel, Fungal infections, Antifungal activity, Controlled release, Drug formulation.

1. Introduction

Fungal infections are a significant health concern, affecting millions of people worldwide.[1] These infections range from superficial conditions such as athlete's foot and ringworm to more severe systemic infections that can be life-threatening, particularly in immunocompromised

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Formulation and Development of Controlled Released Ocular Insert

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KEYWORDS

Ocular Insert, HPMC, Ethyl Cellulose, solvent casting

ABSTRACT:

The primary goal of this study is to create flurbiprofen ocular inserts that are successful in preventing ocular infections. By increasing the medication's bioavailability through prolonged drug-eye contact times and regulating trans-corneal drug penetration, these inserts can improve ocular therapy. Our goal is to optimize the formulation to demonstrate a continuous release of the medicine, allowing for the maintenance of the dose for an extended duration. In order to do this, we created formulations of flurbiprofen ocular inserts using a variety of polymers, varying quantities of HPMC, ethyl cellulose, and a plasticizer called dibutyl phthalate. The produced formulations were assessed for stability, appearance, durability, v homogeneity of drug contents, in vitro and in vivo release of the drug, and other physical and analytical parameters. Flurbiprofen ocular implants were made using solvent casting.

Introduction

Pharmaceutical scientists find that among the different drug delivery methods, the area of ocular drug delivery is one of the most fascinating and difficult to work in. This method of medication administration circumvents the hepatic first pass effect and enters the systemic circulation, making it easily palatable. Extending an eye drug's contact with the corneal surface can significantly increase its therapeutic efficacy. To accomplish this, the medication is manufactured in a water-insoluble ointment formulation or viscosity-enhancing chemicals are added to eye drop preparations to prolong the period of intimate drug-eye contact. [1].

Unfortunately, these dose forms do not produce a constant drug bioavailability and only provide a little more sustained drug-eye contact than eye drop solutions. Medication must still be taken often throughout the day. Therefore, applying the idea of controlled release as exemplified by ocular inserts presents a compelling alternative strategy to address the challenging issue of extending the pre-corneal drug residence period. [2].

Ocular insert:

A sterile preparation having a solid consistency, specifically sized and shaped for eye application is known as an ocular insert. They are basically made of a drug-containing polymeric support.

The properties of the polymer, the casting solve

Int, and the plasticizers employed determine how permeable the pharmaceuticals are through the ocular films. [3,5]

Material And Methdology

Flurbiprofen was received as gift sample from Sun Pharmaceutical Industries LTD. Andheri (E), Mumbai. HPMC E15, Ethyl Cellulose, Dichloromethane, Ethanol, Divutyl phthalate, sodium chloride, Calcium Chloride, Sodium Bicarbonate, Sodium Hydroxide pellets, Sulphuric acid were procured from S.D Fine Chemicals, Loba Chemie, etc. All the chemicals and reagents were of analytical grade.

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Formulation and Evaluation of Divalproex Sodium Bi-Layered Tablet for the Treatment of Epilepsy

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KEYWORDS
Bi-layered tablet, wet granulation, immediate release, sustained release.

ABSTRACT:

Introduction: Divalproex sodium is considered as the most important antiepileptic drug and widely used for treatment of epilepsy and bi-polar disorders and proplylaxis of migraine. The present work has been done to formulate bi-layered tablet of Divalproex sodium containing immediate release layer and sustained release layer. Both layers were prepared by wet granulation technique as poor flow property exhibited by pure drug. **Method:** The immediate release layer was formulated by using sodium starch glycolate, crosscarmellose sodium as super disintegrant and evaluated for physical parameters, disintegration time and *in vitro* drug release. **Result:** The optimized immediate release layer (IF6) with highest in vitro release of 98.11 was selected for bi-layered tablet formulation. HPMCK4M and HPMC K100M polymer used to retard the drug release from sustained release layer in different proportion and combination and evaluated for physical parameter along with in vitro drug release studies. The optimized sustained release layer (SF8) which extends the Divalproex sodium release more than 18 hrs was selected. Finally Bi-layered tablets were prepared by double compressionof selected sustained release layer and immediate release layer of Divalproex sodium. **Conclusion:** The tablets were evaluated for hardness, thickness, weight variation, friability, drug content uniformityand *in vitro* drug release. All the physical parameters were in acceptable limit of pharmacopeial specification .The stability studies, shown the bi-layer tabletwasstableat40°C/ 75% RH for a period of3 months.

Introduction:

Oral route is most commonly employed route of drug administration. Although different route of administration are used for the delivery of drugs, due to flexibility in dosage form design and patient compliance oral route is preferred [1]. The popularity of the oral route is attributed ease of administration, patient acceptance, accurate dosing, cost effective manufacturing method and generallyimproved shelf-life of the product [2]. There are several techniques of conventional drug delivery system where tablets, capsules, pills, liquids, are used as drug carrier. Among them, solid formulationdo not require sterile conditions and are therefore, less expensive to manufacture [3].

There are several techniques of conventional drug delivery system where tablets, capsules, pills, liquids, are used as drugcarrier. Among them, solid formulation do not require sterile conditions and are therefore, less expensive to manufacture[3].The tablet is the most widely used dosage form because of its conveniencein terms of self-administration, compactness and ease in manufacturing [4]. Tablets are solid dosage forms containing medicinal substances with or without suitable diluents. According to Indian Pharmacopoeia Pharmaceutical tablets are solid, flat or biconvex dishes, unit dosage form, prepared by compressing a drugs or a mixture of drugs, with or without diluents [5]. They are varying in size and weight, depending on amount of

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Formulation and Evaluation of Ciprofloxacin Dental Paste for Treatment on Peridontitis.

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Abstract: For the effective treatment of periodontitis, a prolonged drug release at the infected pocketis essential. Medicated dental pastes and gels for the extended period of retention in infected cavity were prepared for improved local action. Ciprofloxacin hydrochloride and Ofloxacin wasused as model drug. Medicated dental pastes were prepared using release retardant mucoadhesive polymer like Methylcellulose, Hydroxy propyl methylcellulose, Hydroxy ethyl cellulose, Hydroxy propyl cellulose and Sodium carboxy methylcellulose, whereas medicated dental gels were prepared with different mucoadhesive polymer like Methylcellulose, Hydroxypropyl methylcellulose, Hydroxy ethyl cellulose, Hydroxy propyl cellulose and Sodium carboxy methylcellulose in different concentrations of propylene glycol. The prepared formulations were subjected for various physicochemical studies like pH, spreadability, extrudability, viscosity, drug content, in vitro drug release, rheological studies, DSC, FTIR andstability studies. In vitro drug release studies were carried out in diffusion cell using pH 7.2 phosphates buffer as receptor medium. In vitro drug release studies exhibited extended releaseof drug over a period of 6 hrs and release was depended on the type of polymer used. DSC andFTIR studies indicate that there was no interaction between drug-polymer and drugother additives. During rheological studies a wider range of shear rate values was studied to establishthe paste and gels nature. Plots of shear rate versus shear stress shown that all the formulationswere non-Newtonian and exhibit pseudoplastic behavior. Optimal formulations were selected for stability studies. During stability studies different parameters like pH, spreadability, extrudability, viscosity and drug content, did not show any significant ($p>0.05$) variation. In conclusion, hydrocolloid based medicated dental pastes and gels appear to be potential in controlling the release of medicament.

Keywords: Hydrochloride, Ofloxacin, Medicated Dental Pastes, Medicated Dental Gels.

1. Introduction:

The continuous progress of periodontitis-affected teeth eventually leads to thelossof or damage to their function[5]. The bacterial flora of the gingival crevice isimportant in the etiology of periodontal disease[6–8] is established. In healthy condition, gingival and teeth 2mm gap between the normal is between 0. During periodontitis, and other bacterial collagenase enzymes, respectively pathologically deepened sulcus depth is usually exceeding 5mm. The state concerning infectious disease at the site of poly morph nuclear cells brought about by the anti-inflammatory response are possible.

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Formulation and Evaluation of Pulsatile Drug Delivery for Nocturnal Acid Breakthrough Using Famotidine

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Abstract: The development of a floating-pulsatile drug delivery system for famotidine aims to enhance therapeutic efficacy and patient compliance by synchronizing drug release with circadian Famotidine ythms in acid secretion. Current systems for Famotidine fail to adequately align drug release with circadian Famotidine ythms, potentially limiting treatment effectiveness and patient adherence. This study focused on developing a novel floating-pulsatile drug delivery system for Famotidine that achieves controlled release synchronized with circadian acid secretion patterns. Preformulation studies assessed Famotidine stability and excipient compatibility, followed by direct compression of core tablets. These tablets were then coated with ethyl cellulose and hydroxypropyl methylcellulose to achieve pulsatile release, supplemented with coatings for effervescence and gastric buoyancy. The resulting formulation exhibited a burst release pattern after a predetermined lag time, maintaining buoyancy in the gastric environment and effectively synchronizing drug release with circadian Famotidine ythms. This innovative approach holds promise for improving therapeutic outcomes and patient compliance in Famotidine treatment, particularly in managing gastric disorders.

Keywords: Floating-Pulsatile Drug Delivery, Ranitidine Hydrochloride, Controlled Release, Gastric Buoyancy, Circadian Famotidine Ythm, Acid.

1. INTRODUCTION

Chronopharmaceutics applies chronobiology the study of biological Famotidine ythms and their adaptation to solar and lunar cycles to drug delivery. It focuses on Famotidine ythms characterized by period, level, amplitude, and phase. Pharmaceutics designs and evaluates dosage forms for safety and efficacy. Chronotherapeutics strategically times drug doses based on Famotidine ythm determinants in disease pathology, pharmacology, and circadian structures to optimize outcomes and minimize side effects.

Human biological Famotidine ythms, influenced by sunlight, include short-period (e.g. neural oscillations), intermediate-period (e.g. heartbeat, sleep patterns, circadian Famotidine ythms), and infradian Famotidine ythms (e.g. menstrual cycle, seasonal behaviors). These Famotidine ythms impact diseases like duodenal ulcers, cancer, cardiovascular diseases, diabetes, hypercholesterolemia, and neurological disorders, making them suitable for chronopharmaceutical drug delivery.

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Exploring 1,3,4-Oxadiazole Derivatives as Potent α-Amylase Inhibitors: Design, Synthesis, and Biological Evaluation

Diabetes mellitus is a growing global health concern, and α-amylase inhibitors have been recognized as promising therapeutic agents for its treatment. This study aimed to design, synthesize and evaluate 1,3,4-oxadiazole derivatives as potential α-amylase inhibitors. A series of 1,3,4-oxadiazole derivatives were designed and subjected to in silico ADMET, Lipinski's Rule of Five, and drug-likeness analysis. The most promising compounds, SC2 and SC8, were synthesized and their α-amylase inhibitory activity was assessed in vitro. The interactions with the human α-amylase (PDB ID: 6Z8L) which is a target protein, was analyzed through molecular docking studies. The designed compounds complied with Lipinski's Rule of Five and exhibited favourable drug-likeness properties. In silico ADMET analysis predicted good absorption and distribution profiles. SC2 and SC8 demonstrated potent α-amylase inhibitory activity with IC_{50} values of 36.5±1.5 μg/mL and 45.2±2.1 μg/mL, respectively, compared to acarbose (68.9±3.2 μg/mL). Molecular docking revealed that both compounds formed crucial interactions with key amino acid residues in the enzyme's active site. The binding affinities of SC2 and SC8 were -10.1 kcal/mol and -9.1 kcal/mol, respectively. The 1,3,4-oxadiazole derivatives, particularly SC2 and SC8, demonstrated potential as α-amylase inhibitors with favorable ADMET properties. These findings provide a basis for further optimization and development of these compounds as novel antidiabetic agents.

Keywords: 1,3,4-oxadiazole derivatives, α-amylase inhibitors, diabetes mellitus, ADMET, molecular docking, Lipinski's Rule of Five, drug-likeness.

Abbreviation

ADMET:	Absorption, Distribution, Metabolism, Excretion and Toxicity;	SD:	Standard Deviation;
		SAR:	Structure-Activity Relationship
Mol Log P:	Partition coefficient between octanol and water;	CMC:	Critical Micelle Concentration;
		H-bond:	Hydrogen bond;
TPSA:	Topological Polar Surface Area;	Å²:	square angstrom;
Caco2:	Human colorectal adenocarcinoma cells;	GI:	Gastrointestinal;
		logBB:	Blood-Brain Barrier partition coefficient;
BBB:	Blood-Brain Barrier;	CYP:	Cytochrome P450;
PPB:	Plasma Protein Binding;	OD:	Optical Density;
PDB:	Protein Data Bank;	IC_{50}:	Half maximal inhibitory concentration;

Introduction

Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels resulting from defects in insulin secretion, insulin action, or both. The World Health Organization (WHO) estimates that worldwide diabetes affects about 422 million people, making it a major global health concern [1]. The prevalence of this disease has augmented dramatically over the past few decades, primarily due to changes in lifestyle, urbanization and an aging population. Diabetes can lead to severe complications such as cardiovascular diseases, stroke, kidney failure, blindness and lower limb amputation, significantly impacting an individual's quality of life and placing a heavy burden on healthcare systems [2].

There are two primary types of diabetes, namely type 1 and type 2. Type 1 diabetes is an autoimmune disease in which the body's immune system destroys the insulin-producing β-cells of the pancreas, resulting in an absolute insulin deficiency. Type 2 diabetes, which accounts for about 90 % of all diabetes cases, is

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FORMULATION AND EVALUATION OF HERBAL MOUTHWASH

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ABSTRACT

Mouthwash being one of the significant formulations as a part Oral health care in our day to day life. As per the research, there is rare number of mouthwash available as herbal formulation with medicated use.

So considering that in mind, the key objective of this project work, i.e. herbal formulation is to provide an alternative preparation for oral health related issues like toothache, swelling, redness, bacterial or fungal infection in mouth, tooth decay, bleeding gums, weakened gums, etc.

Also for improving gums strength, removing bad breathe and give fresh feel during good start of the day. Various herbal products and their extracts such as Betel, Turmeric, cinnamon etc, have shown significant advantages over the chemical ones.

They have very minimal or no side effects and they are less harmful. Phytotherapeutic plant extracts and essential oils are used to create and produce herbal mouthwashes, which contain a variety of active ingredients. Herbal mouthwash is used to promote better oral hygiene. It aids in reducing tooth plaque. It is applicable to gum diseases. Used to eliminate bacteria in the mouth.

Keywords- Herbal mouthwash, Betel leaves, Antiseptic

I. INTRODUCTION

Herbal mouthwash defined as antiseptic liquid preparation for cleaning the mouth and teeth or freshening the breath. Mouth rinse, oral rinse, or mouth bath is a liquid which is held in the mouth passively or swilled around the mouth by contraction of the perioral muscles and movement of the head, and may be gargled and liquid bubbled at the back of the mouth.

The meaning of MOUTHWASH is a usually antiseptic liquid preparation for cleaning the mouth and teeth or freshening the breath. Mouthwashes are often prescribed in dentistry for prevention and treatment of several oral conditions. In the recent times the use of naturally occurring products what is otherwise known as grandmothers remedy are used on a large scale. This has now called for a newer age of mouth washes but is the new age mouth washes at par with the gold standard or even better than them this study investigates.

Mouth washes have the ability to deliver the therapeutic ingredients and ingredients to access against the organisms present on the surface of the mouth. The role of junk foods in affecting the oral cavity of an individual is high and unavoidable.

The foods like Candies, chocolates, jellies and jams have high sugar content the children and adolescents are usually prone to consume this kind of sugar products but, the sugar content possess insoluble glucan which gets attached to the enamel of the tooth resulting in the formation of cavity in tooth. The carbonated drinks is other important destroyer of teeth enamel, as it erodes the enamel some may even results in depth eruption of dentine and results in tooth discolouration. Hence mouthwashes or mouth rinses are used to remove the retained food particles in a short period of time.

Herbal mouthwash are the mouthwash which are prepared from natural plant extract, the natural extract present in the herbal mouthwash are obtained from various plant's leaves, fruit, seeds and various tree oils. Or Phytochemicals are naturally occurring ingredients found in herbal mouthwashes, which have the intended anti-inflammatory action. Natural remedies for oral health issues, including Betel leaves ,curcumin ,cinnamon oil, have been shown in studies to be safe and effective when used alone or in combination.

Materials and methods

Materials:

A mixture of betel leaves and curcumin was taken also cinnamon oil and some amount of alcohol, water and salt solution.

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FORMULATION AND CHARACTERIZATION OF NOVEL DE-PIGMENTING HERBAL FACIAL SERUM INCORPORATED WITH SAFFRON AND LEMON OIL

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ABSTRACT

Cosmetics nowadays are in high demand. Out of these cosmetics, herbal cosmetics are most preferred due to their lesser extent of side effects. Herbal cosmetics are widely used due to the infinite number of uses for daily purposes. Several different types of cosmetics formulations are available in the market like serums, face creams, lotions, etc. In this article, we have described herbal face serum which is formulated using various active herbal ingredients. Herbal formulated serum was an oil-in-water emulsion type. The goal of the development of this formulation was for its various applications like depigmentation, anti-aging, skin brightening, skin tightening, nourishing and soothing, and many more. This formulation is very effective due to the combination of active ingredients in this formulation. The key ingredients used for the formulation are Saffron, aloe Vera, olive oia, and lemon oil. These ingredients have numerous positive impacts on the skin. The evaluation parameters performed for this formulated product were physical tests, pH tests, Spreadability, microbial count tests, and penetration test. All the tests were positive and the formulated serum was safe to use and stable on storage.

KEYWORDS: Face serum, Saffron, Depigmentation, Herbal, Lemon Oil, Aloe Vera.

INTRODUCTION

According to the Drugs and Cosmetics Act of 1940 and its Regulations of 1945, cosmetics are defined as any article aimed at cleaning, beautifying, promoting attractiveness, or changing the appearance of any part of the human body, or to be used as a component of cosmetics. The skin is the most distant and superficial part of the body. It accounts for about15–20% of the body mass. The largest body organs that fight for healing and repair themselves are our skin, but sometimes skin can develop many skin problems such as dryness, dark spots, pigmentation, acne, wrinkles, etc. due to UV rays, pollutants, dust and dirt, excessive use of harmful chemicals, makeup that remains overnight, etc. In the present work, it has been done to develop and evaluate such treatments to combat these skin conditions. Skin serums are a cosmetic preparation that brings therapeutic active ingredients into the skin to eliminate the use of harmful chemicals and protect the skin by bringing immediate results. Cosmetic serums are as concentrated as other creams, based on water or oil. Serum is defined as a concentrated product that contains 10 times more organic substances than cream. A good facial serum can provide your skin with a luminous and soft texture, reduce pore size, hydrate the skin and maintain moisture. Whether it is a moisturizer, anti-aging, it should contain. antioxidants, and cell compatible components. Herbal cosmetics are also known as natural cosmetics or organic cosmetics. They contain biological active principles and ingredients from herbs or any part of herbs. In recent years, the demand for herbal cosmetics has grown worldwide due to their light effect and non-toxic nature. Herbal or organic extracts are preferably used to formulate safe cosmetics. Herbal extracts are herbs extracted, which play an important role in moderation. It is now increasingly used as a substitute in cosmetics, foods and alternative drugs. An increase in interest in herbs is part of the movement to improve health conditions. The purpose of this study was to formulate natural face serums with the help of saffron, aloe vera, rose water and other beneficial ingredients to produce depigmentation, anti-aging, fairness and other beneficial effects. Aloe vera plants have been widely used for centuries for their health, beauty, medicinal, and skin-care properties. It acts as an astringent to seal pores. Its moisturizing effect is also studied in the treatment of dry skin. It reduces the appearance of fine wrinkles and has anti-acne effect. Other ingredient is saffron is known for their use as cosmetics because it is beneficial to human skin. Saffron can produce a variety of skin applications such as antioxidants, de-tanning, inflammation, aging, dark spots, face toner, etc. The next important active substance used is rose water. Roses have been used for cosmetics for centuries and have evolved into modern skin care products. It has beneficial effects such as anti-aging, anti-inflammatory, skin whitening, anti-aging, skin