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3.3

RESEARCH PUBLICATION AND AWARDS

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3.3.2

Number of research papers per teacher in the journals notified on UGC care list during the year

(ACADEMIC YEAR 2023-2024)

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3.3.1. Research papers published per teacher in the journals notified on UGC care list during AY 2023-2024

Sl. No	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
1	Analytical method development and validation of Quetiapine Fumarate in API and dosage form by using RP-HPLC.	L.Siva shankar Reddy	Pharmaceutical Analysis	Oriental journal of Chemistry	2023	0970-020	http://www.orientjchem.org/vol39no4/analytical-method-development-and-validation-of-quetiapine-fumarate-in-api-and-dosage-form-by-using-rp-hplc/
2	Formulation and characterization of Carvedilol self emulsification drug delivery system	D. Maheshwara Reddy	Pharmaceutics	High Technology Letters	2023	1006-6748	https://gjstx-e.cn/volume-29-issue-7-july-)23/
3	Formulation and Characterization of Sparfloxacin loaded Niosomal In-Situ Gel for Ocular application	D. Maheshwara Reddy	Pharmaceutics	Journal of XIDIAN university	2023	1001-2400	https://xadzkjdx.cn/index.php/volume-17-issue-7-july-23/
4	In Silico Docking Studies, Synthesis, Characterization, and Antimicrobial Antimycobacterial Activity of Coumarinyl Oxadiazoles from Fatty Acids	N.Y.Subbaiah	Pharmaceutical Chemistry	Russian Journal of Bioorganic chemistry	2023	1068-1620	https://link.springer.com/article/10.1134/S1068162023060195
5	A novel RP-HPLC method development and validation for the determination of Azacitidine using	R.Nageswar Rao	Pharmaceutical Analysis	Oriental journal of Chemistry	2023	4996-5004	https://globalresearchonline.net/journalcontents/v54-1/03.pdf

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	Hydrotrophic solvent by QBD						
6	Advancements in scaffolds based drug delivery system	K.Sampath kumar	Pharmaceutics	International Journal of Apllied Sciences	2023	2252-8814	https://journals.innovareacademics.in/index.php/ijap/article/view/48645/29081
7	Formulation and evaluation of Dextromethorphan loaded polymeric micellar oral dispersible tablets	K.Pavan Kumar	Pharmaceutics	Eur.Chem.Bull	2023	2301-2309	https://www.researchgate.net/publication/373173662_Formulation_And_Evaluation_Of_Dextromethorphan_Loaded_Polymeric_Micellar_Oral_Dispersible_Tabltes_Section_A-Research_Paper_Eur
8	Formulation and evaluation Pinacidil transdermal patches	K.Pavan Kumar	Pharmaceutics	Journal of XIDIAN university	2023	1001-2400	https://www.researchgate.net/publication/373173656_FORMULATION_AND_EVALUATION_OF_PINACIDIL_TRANSDERMAL_PATCHES
9	Evaluation and method development for quantification of Piperine in Hutabhugadi Churna by RP-HPLC	S.V.Suresh Kumar	Pharmacognosy	International joural of Ayurvedic medicine	2024	0976-5921	https://ijam.co.in/index.php/ijam/article/view/4794/1219
10	LC/MS-Based profiling of Hedyotis aspera whole plant methanolic extract and evaluation of its nephroprotective potential against Gentamicin-induced nephrotoxicity in rats supported by In silico	L.Siva shankar Reddy	Pharmaceutical Analysis	MDPI	2023	2079-7737	https://www.mdpi.com/2297-8739/10/11/552

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11	Analytical method development, validation and stability indicating studies of Avanafil by using RP-HPLC technique	L.Siva shankar Reddy	Pharmaceutical Analysis	Journal of populati-on therapeutics and clinical Pharmacology	2023	2561-8741	https://jptcp.com/index.php/jptcp/article/view/2426
12	Analytical method development, validation and stability indicating studies of Secnidazole in API and Pharmaceutical Dosage form by using RP-HPLC technique	L.Siva shankar Reddy	Pharmaceutical Analysis	Journal of population therapeutics and clinical Pharmacology	2023	2561-8741	https://jptcp.com/index.php/jptcp/article/view/2427
13	Reverse phase –HPLC method development, validation and stability indicating studies of Deferasirox in its API and Pharmaceutical dosage form, Latin American Journal of Pharmacy	L.Siva shankar Reddy	Pharmaceutical Analysis	Latin American Journal of pharmacy	2023	2362-3853	ISSN 0326-2383
14	Unveiling the Cardioprotective Power: Liquid Chromatography–Mass Spectrometry (LC–MS)-Analyzed Neolamarckia cadamba (Roxb.) Bosser Leaf Ethanolic Extract against Myocardial Infarction	A.V.Badarinath	Pharmaceutics	MDPI	2023	3722	https://pubmed.ncbi.nlm.nih.gov/37960078/

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	in Rats and In Silico Support Analysis.						
15	Analytical method development and validation of Quetiapine Fumarate in API and Dosage from by using RP-HPLC,	R.Nageswar Rao	Pharmaceutical Analysis	Oriental journal of Chemistry	2023	2231-5039	https://www.orientjchem.org/vol39no4/analytical-method-development-and-validation-of-quetiapine-fumarate-in-api-and-dosage-form-by-using-rp-hplc/
16	Novasomes- A Novel vesicular carriers	K.Pavan Kumar	Pharmaceutics	Journal of XIDIAN university	2023	1001-2400	https://www.researchgate.net/publication/376169989_NOVASOMES_-A_NOVEL_NANO_VESICULAR_CARRIERS
17	Formulation and evaluation of Entacapone loaded cubosomal sustained release tablets	K.Pavan Kumar	Pharmaceutics	Journal of XIDIAN university	2023	1001-2400	https://www.researchgate.net/publication/374256966_FORMULATION_AND_EVALUATION_OF_ENTACAPONE_LOADED_CUBOSOMAL_SUSTAINED_RELEASE_TABLETS
18	A Prospective Observational Study on Assessment of Antibiotic Therapy in Renal Failure Patients with Infections	B.Pradeep	Pharmacology	Chettinad Health city Medical Journal	2024	2277-8845	https://www.researchgate.net/publication/383132640_A_Prospective_Observational_Study_on_Assessment_of_Antibiotic_Therapy_in_Renal_Failure_Patients_with_Infections
19	Efficacy of Hypoglycaemic Agents in Type-2 Diabetes Mellitus with Associated Co-	B.Pradeep	Pharmacology	Indian Journal of natural sciences	2024	0976-0997	ISSN: 0976 – 0997

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	Morbidities: A Prospective Observational Study						
20	Design of experiment approach for method development and validation of Bilastine in pure and Pharmaceutical Dosage form using RP-UFLC	R.Nageswar Rao	Pharmaceutical Analysis	Oriental journal of Chemistry	2023	736-745	https://www.orientjchem.org/vol39no3/design-of-experiments-approach-for-method-development-and-validation-of-bilastine-in-pure-and-pharmaceutical-dosage-form-using-rp-uflc/
21	Unveiling the Cardioprotective Power: Liquid Chromatography–Mass Spectrometry (LC–MS) Analyzed Neolamarckia cadamba (Roxb.) Bosser Leaf Ethanolic Extract against Myocardial Infarction in Rats and In Silico Support Analysis	M.Praisy Gladys	Pharmacology	MDPI	2023	2079-7737	https://www.semanticscholar.org/paper/Unveiling-the-Cardioprotective-Power%3A-Liquid-Bosser-Kumar-Prasanth/e0566e1561d4d1ed8aee744f1276a6b010f414c8
22	Obesity-associated diabetes mellitus and its health related outcomes in a tertiary care centre	C. Bhargav reddy	Pharmacy practice	World journal of pharmacy and pharmaceutical sciences	2024	2278-4357	DOI: 10.20959/wjpps2024 10-28274

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ORIENTAL JOURNAL OF CHEMISTRY
An International Open Access, Peer Reviewed Research Journal
www.orientjchem.org
Est. 1984
ISSN: 0970-020 X
CODEN: OJCHEG
2023, Vol. 39, No.(4):
Pg. 1040-1045

Analytical Method Development and Validation of Quetiapine Fumarate in API and Dosage form by Using RP–HPLC

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http://dx.doi.org/10.13005/ojc/390430

(Received: May 27, 2023; Accepted: July 30, 2023)

ABSTRACT

RP-HPLC method developed is a simple, precise and functional technique for the calculation of amount of Quetiapine fumarate from marketed tablets and bulk form. The RP-HPLC analysis was carried out on Hyper chrome ODS-BP 5µm column (4.6mm×200mm) using a mobile phase 0.1% Orthophoshoric acid and Acetonitrile (80:20v/v) with pH 5.5. Quetiapine fumarate quantified by using UV detector at 210nm. The retention time of the Quetiapine fumarate was found to be 2.6 minute. The linearity of the drug concentration ranges from 20-400µg/mL. The detection and quantification limits were intended at 3.70µg/mL and 12.35µg/mL. The precision, accuracy, specificity, robustness and degradation studies were validated.

Keywords: RP-HPLC, Quetiapine fumarate, Acetonitrile, 0.1% Orthophoshoric acid, Validation.

INTRODCUTION

Quetiapine Fumarate is an Anti-psychotic agent and Anti depressive agent. It is designated chemically as a 2-[2-(4-Dibenzo [b, f][1,4] thiazepin-11-yl-1-piperazinyl) ethoxy] ethanol. The drug's solubility is in methanol, Ethanol, Water and higher soluble under acidic condition with pKa value-15.12 and 7.02 strongly basic PKa, half-life 6 h protein binding-83%, route of administration is oral, metabolism in liver and excretion by kidneys. The entire work was planned according to the ICH guidelines[1]. HPLC methods were reported in various journals-assay method[2], stability indicating method[3], isocratic method[4], and other RP-HPLC methods were taken into consideration for this study[5-12]. Many UV methods also exist for the estimation of Quetiapine, which one is referred in this context[13].

Methodology

Preparation of standard solution for system suitability

Accurately weighed 10 mg of Quetiapine, transferred into volumetric flask of 10 mL capacity and required quantity of mobile phase (0.1% OPA: ACN 80:20v/v) used to make up to the mark. The solution sonicated to be affirmative that the drug was dissolved. This solution was marked as the

FORMULATION AND CHARACTERISATION OF CARVEDILOL SELF EMULSIFICATION DRUG DELIVERY SYSTEM (SEDDS)

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Abstract - The aim of the present investigation was to formulate and characterization of Carvediolol (CAR) self emulsifying drug delivery system (SEDDS) prepared by using peppermint oil, tween 80 as surfactant and PEG 400 as co-surfactant for improving its solubility and dissolution rate. Solubility of CAR in different oils, surfactants and co-surfactants was determined for the screening of excipients. Pseudoternary phase diagrams were constructed by the aqueous titration method, and formulations were developed based on the optimum excipient combinations with the help of data obtained through the maximum micro emulsion region containing combinations of oil, surfactant, and co-surfactant. The prepared formulation are assessed by various parameters such as Visual observation, Droplet size analysis and PDI, Zeta potential measurement, Drug loading efficiency, Self emulsification and drug precipitation studies, Phase separation study, Determination of emulsification time, Spectroscopy characterization of optical activity, Turbidity measurement, Viscosity determination, Cloud point measurement, Drug release study and its kinetics. The best formulation of SEDDS contains 10% peppermint oil, 90% Smix (tween 80, and polyethylene glycol 400). Formulation F9 found lower droplet size (169.7nm), PDI (0.2), and zeta potential (-24.8 mv) and % drug load (98.2 %). It was concluded that the smaller particle size and drug load more the release of drug which results in better bioavailability. The evaluation parameters of all formulation were found within the limits. The *in vitro* drug release from CAR SEDDS formulation were found to be 99.34% after 90 min. *In-vitro* drug release studies closely indicate that best formulation obey Higuchi kinetics and non-fickian diffusion. Overall, this study suggests that the dissolution and oral bioavailability of CAR could be improved by SEDDS technology.
Keywords: Carvediolol, self emulsifying drug delivery system, Pseudoternary phase diagrams, *In-vitro* drug release.

I. INTRODUCTION

The oral route is one of the most popular routes for chronic drug therapy; nevertheless, for poorly water soluble drugs, drug dissolution is often a rate-determining stage in the absorption processes. (1). Approximately 40% of commercial products have poorly soluble or lipophilic compounds, resulting in decreased oral bioavailability, significant intra and inter subject variability, and a probable dosage increase (2). Numerous technologies, such as solid dispersions, liposomes, the utilisation of cyclodextrins, nanoparticles, salt production, and so on, are used to overcome this problem (3-5).

Lipid base formulation (LBF) is a constructive method for increasing oral bioavailability of BSC class II drugs. Diverse types of LBF subsist such as emulsion, self-emulsifying drug delivery systems (SEDDS), self-micro-emulsion drug delivery systems (SMEDDS), self-nano-emulsion drug delivery systems (SNEDDS), solutions or suspensions of the drug in lipid medium (6). SEDDS are isotropic mixtures of naturals or synthetic oil, surfactants, with or without a co-surfactant. Upon mild agitation these systems can form fine oil in water emulsions in aqueous media, such as dissolution media or gastrointestinal fluids (7).

Carvedilol is an arylethanolamine and a racemic mixture of two enantiomers that contains a nonselective β-adrenergic blocking agent with α 1-blocking activity that is used in the treatment of angina pectoris, mild to moderate hypertension, and chronic heart failure. Carvedilol poorly dissolves in water that limits drug absorption and delays onset time (8, 9). SEDDS is a potential for improving the bioavailability of drugs with poor aqueous solubility. In our study Carvedilol SEDDS was evaluated to improve the dissolution rate, following by oral absorption of carvedilol.

The purpose of the study was to formulate a stable formulation of SEDDS to enhance the solubility, release rate, and oral absorption of the poorly water (BCS-II)- soluble drug, carvedilol.

II. MATERIALS AND METHODS

Carvediolol is procured from yarrow chem. Tween 80, PEG400 were procured from the Asian scientific. Other chemicals used were analytical grade.

Method:

Solubility studies:

The experiment aimed to ascertain the solubility of carvedilol in different oils and surfactants. In glass vials, a surplus of carvedilol was combined with 2 ml of selected vehicles and stirred with a glass rod for 30 minutes. Subsequently, the mixtures were allowed to equilibrate at 30°C for 48 hours in a water bath and then subjected

Formulation and Characterization of Sparfloxacin loaded Niosomal In-Situ Gel for Ocular application

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Abstract - Niosomes, an emerging class of novel vesicular systems, are non-ionic surfactant vesicles which can entrap both hydrophilic and lipophilic drugs. Niosomes are incorporated into *In situ* gels for sustained release of drug and to prolong the residence time. The aim of present study is to formulate and characterization ocular niosomal *in situ* gels of sparfloxacin. Sparflocxacin is a fluoroquinolone antibiotic used in the treatment of bacterial infections. Niosomes were prepared using tween 80 as a surfactant in different ratios with cholesterol using Ethanol injection method and Ether injection method. They were evaluated for particle size, entrapment efficiency and zeta potential. Niosomes prepared using cholesterol and tween 80 in the ratio 1:3 showed good entrapment efficiency and less particle size with small PDI. The best formulation was formulated as *in situ* gels using Carbopol 974P and HPMC K4M and evaluated for gelling capacity, pH, viscosity, drug content and *in vitro* drug release with kinetics. The niosomal *in situ* gel is a viable alternative to conventional eye drops by virtue of its ability to enhance bioavailability through its longer precorneal residence time and ability to sustain drug release.

Keywords: Niosomes, Insitugel, Sparfloxacin, ether injection method, ethanol injection method.

I.INTRODUCTION

The human eye stands out as an exceptional organ, both in its anatomy and physiology, consisting of diverse structures, each serving independent functions that protect it from foreign substances. Due to its intricate nature, pharmaceutical scientists face numerous challenges when it comes to delivering drugs to the eye (1). The human cornea, composed of epithelium, stroma, and endothelium, poses a barrier to the entry of drug molecules into the eye (2). Therefore, formulators aim to overcome these protective barriers without causing any permanent tissue damage while bypassing restrictions.

In ophthalmic drug delivery systems, pharmacotherapeutics strive to achieve effective drug concentration at the targeted site for a sufficient duration to produce a response (3). Successfully delivering drugs while minimizing side effects is crucial in treating ocular diseases. Conventional methods like eye drops often suffer from poor ocular drug bioavailability due to anatomical and physiological constraints of the eye, impermeable corneal epithelium membrane, nasolacrimal drainage, and tears dynamics. Only a small percentage (1–10%) of topically applied drugs is absorbed, with the majority being absorbed systemically, leading to systemic side effects (4).

To address issues like poor bioavailability and therapeutic response caused by pulsed dosing and rapid tear turnover, a solution lies in in situ gel formation (4). In situ forming gels are liquid when instilled into the eye, but they rapidly gel in the eye's cul de sac, forming viscoelastic gels that adapt to environmental changes (5). This approach shows promise in overcoming the challenges of ophthalmic drug delivery.

Sparfloxacin is member of fluoroquinolone class of antimicrobial drugs. It is active against a wide range of Gram +ve and Gram -ve organisms, with chemical name 5-amino-1-cyclopropyl-7-[(3S,5R)- 3,5-dimethylpiperazin-1-yl]-6,8-difluoro-4- oxoquinoline-3-carboxylic acid and molecular formula $C_{19}H_{22}F_2N_4O_3$. (6)

The aim of the present research was to prepare sparfloxacin by loading in niosome vesicles and improve its retention time at the particular site of action by incorporating the drug-loaded niosome into pH sensitive in situ gel which significantly reduces dosage frequency hence increase patient compliance.

II. MATERIALS AND METHODS

Sparfloxacin, Cholesterol and Tween 80 are procured from yarrow chem. Pvt Lt.d. Carbopol 934P, HPMC are purchased from Loba chemicals. All other chemical are analytical grade.

Method:

Niosomes are prepared by ether injection and ethanol injection method. Weigh accurately respective quantity of cholesterol and tween80 along with add 3ml of methanol/ether then stirrer with magnetic

ISSN 1070-3632, Russian Journal of Bioorganic Chemistry, 2023, Vol. 49, No. 6, pp. 1389–1397. © Pleiades Publishing, Ltd., 2023.

In Silico Docking Studies, Synthesis, Characterization, and Antimicrobial Antimycobacterial Activity of Coumarinyl Oxadiazoles from Fatty Acids

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[c] *Department of Pharmaceutical Quality Assurance, SRM College of Pharmacy, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu (Dt), Tamil Nadu, 603203 India*

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Received February 8, 2023; revised March 4, 2023; accepted March 6, 2023

Abstract—This present study deals with the design and evaluation of novel coumarinyl oxadiazoles substituted fatty acids derivatives using synthetic approach and to screen for *in vitro* antimicrobial activity. A recent literature survey revealed that, coumarinyl oxadiazoles substituted fatty acids derivatives shown for their ability to improve biological activities The condensation of 2-oxo-2*H*-chromene-3-carbohydrazide with substituted fatty acids in the presence of phosphorus oxychloride yielded a variety of novel 5-*N*-alkyl-1,3,4-oxadiazole-2*H*-chromen-2-one derivatives. The structure of the newly synthesized compounds was validated by elemental analysis, IR, ^{1}H NMR, and mass spectrum data. Further, analysis of the drug-likeness property is predicted through five parameters like Lipinski rule, Ghose, Egan, Vebers, and Muegge rules. As molcular docking is normally used for understanding drug-receptor interaction. The above-derived compounds were subjected to molcular docking studies (4MFI, 5E2C, 6FBV, and 6NNE). The antibacterial and anti-mycobacterial properties of these substances were investigated. Compounds 3-(5-dodecyl-1,3,4-oxadiazol-2-yl)-2*H*-chromen-2-one and 3-(5-hexadecyl-1,3,4-oxadiazol-2-yl)-2*H*-chromen-2-one demonstrated considerable antibacterial activity against several tested bacterial strains in antimicrobial tests. In comparison to standard, compound 3-(5-(heptadec-8-en-1-yl)-1,3,4-oxadiazol-2-yl)-2*H*-chromen-2-one demonstrated excellent antitubercular action. This hypothesis provides a possible explanation of the enhanced biological activity of the derived compounds.

Keywords: coumarins, oxadiazoles, fatty acids, $POCl_3$, antimicrobial activity, antimycobacterial activity

DOI: 10.1134/S1068162023060195

INTRODUCTION

Coumarins are benzopyrone analogues that are found in abundance in nature [1]. Coumarins' fused heterocyclic framework has been utilized as a model scaffold for the synthesis of a wide range of analogues to study their biological activity. Coumarins have been shown to have a wide range of biological properties in the literature, including antioxidant [2], anticancer [3], vasorelaxant [4], antiviral [5], and anti-inflammatory activities [6, 7].

Lipids are a diverse category of molcules that include fats, oils, steroids, waxes, and other related substances [8, 9]. Lipids are essential in biological systems because they constitute the cell membrane, which serves as an automated barrier that separates a cell from its surroundings. Carboxylic acids with a hydrocarbon side chain are known as fatty acids. They are the most basic type of lipid. Dietary fats, lipids (fatty acids, triglycerides, cholesterol), essential fatty acids (linoleic and α-linoleic acids) are the macronutrient categories. Fats play an important role in maintaining caloric balance

Chapter - 1

Method Devolopment and Validation of Azacitidine in Pure and its Pharmaceutical Dosage form in Hydrotropic Solvents by using UV Spectroscopic Method

R Nageswara Rao, D. Madhuri, L Siva Sanker Reddy, S V Suresh Kumar, N Y Subbaiah, N Madana Gopal, V Ravikumar, P. Dilshad, R. Kedara Harmya Sri, U. Sangeetha, Y. Likitha and M. Kundana

Abstract

A simple, accurate, precise and sensitive spectroscopic method was developed for the estimation of Azacitidine. The estimation of, Azacitidine was carried out at the maximum absorbance at 265 nm. The method was found to be linear and obeys beers law in the concentration range 100-500µg/ml with a correlation coefficient 0.999, the developed method was validated as per ICH guidelines and was found to be accurate and precise. Thus the proposed method can be successfully applied for the estimation of Azacitidine.

Keywords: Azacitidine, UV spectroscopy, method development, ICH guidelines and validation

1. Introduction

Azacitidine is chemically 4-amino-1-Beta-D-ribofuranosyl-1,3,5-traizin-2(1H)-one. It is an Anti-neoplastic agent. Azacitidine is a nucleoside analogue of cytidine that specifically inhibits DNA methylation by trapping DNA methyl transferases. It was originally developed as a cytotoxic agent and an application to the FDA requesting its approval as such was turned down more than 25 years ago. Literature survey reveales that several methods have been available for the estimation of Azacitidine for stability indicating, impurities and other combination drugs usingUV Spectroscopy. The proposed method is more precise, accurate and specific for the quantitative determination of Azacitidine in pharmaceutical dosage forms.

International Journal of Applied Pharmaceutics

ISSN- 0975-7058

Vol 15, Issue 6, 2023

Review Article

ADVANCEMENTS IN SCAFFOLD-BASED DRUG DELIVERY SYSTEMS: A COMPREHENSIVE OVERVIEW AND RECENT DEVELOPMENTS

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Received: 18 Jun 2023, Revised and Accepted: 12 Aug 2023

ABSTRACT

In the field of tissue engineering, there is a growing focus on developing strategies for the reconstruction of dysfunctional tissue models through the transplantation of cells using stable scaffolds and biomolecules. Recently, significant attention has been focused on the expansion of dynamically responsive platforms that mimic the extracellular environment, leading to the integration of tissues and organs. The successful regeneration or restoration of tissues relies on the presence of a scaffold that serves as a temporary framework for cell proliferation and extracellular matrix formation. Various methods, including solvent abstraction, freeze drying/abstraction/gelation, particle compression, and phase reversal, can be employed to fabricate scaffolds. In the context of drug delivery systems utilizing polymeric scaffolds, careful consideration of optimal parameters such as drug loading capacity is crucial. Biodegradable polymers and bioceramics are commonly utilized to fabricate scaffolds. This review provides an overview of the significance of scaffolds, the materials employed, and the fabrication techniques utilized in the expansion of scaffolds for sustained drug delivery and tissue engineering applications.

Keywords: Engineering, Delivery, Implant, Novel, Regeneration, Scaffold

DOI: https://dx.doi.org/10.22159/ijap.2023v15i6.48645. Journal homepage: https://innovareacademics.in/journals/index.php/ijap

INTRODUCTION

Tissue engineering (TE) is the use of a blend of biomaterials, cells, and bioactive substances to replace or speed up the healing of injured or diseased tissue [1]. To restore or heal human tissues that have been harmed by ailment/injuries, thousands of clinical procedures are carried out every day. The injured tissue is traded by using donor graft tissues (autografts, allografts, or xenografts), but the main issues with this are a lack of donors or donation sites, disease transmission, graft rejection, pain and morbidity at the donor site, the amount of donor tissue that can be collected safely, and the probability of adverse immune reactions [2].

There are objectives for the regeneration of injured tissue by creating biological substitutions that restore, sustain, or enhance tissue function as opposed to substituting spoiled tissue with transplants, TE, or regenerative medicine [3, 4]. In the last two decades, TE and regenerative medicine have sparked scientific study and advance in this field [5]. Because they offer a temporal and space environment for cell enlargement and tissue growth, biodegradable (BDL) polymer scaffolds (SFDs) for TE have attracted a lot of interest [6, 7]. Scaffolding (SFDG) is the core component used to offer cells, medications, and genes to the body.

SFD, or "Scaffold for Drug Delivery," encompasses two main categories: drug-delivery SFDs and cell-delivery SFDs. Within the realm of cell/drug delivery, various types of polymeric SFDs have been developed. For instance, a typical 3D porous matrix (MTX) with a highly porous structure allows for rapid tissue growth and facilitates high cell seeding rates. Another option is an electro-spun or shuffled nanofiber (NFB) MTX, which provides a more physiologically accurate representation of the cellular environment. Additionally, a sol-gel transition hydrogel (HGL) that exhibits thermo sensitivity can be utilized as an SFD. Finally, a porous MSP (Microsphere) is another type of SFD that can be employed for drug or cell delivery. These diverse SFDs offer a range of options for researchers and practitioners seeking effective strategies for drug and cell delivery applications [8-10].

These have been used in TE for the prospect of usage as a cell transport carrier or supporting MTX, and they are already commonly used as sustained protein-discharge formulations [11]. The implantable forms of these polymeric SFDs are a conventional 3D porous/nanofibrous MTX, while the injectable forms are thermo-sensitive sol-gel transition HGL and porous microspheres (MSP).

This biological trinity supports TE tactics, which need the correct interplay of 3 components [12]:

The SFD is a vital component in tissue formation. It binds cells together, provides structural support, and guides their growth and development. Through its three-dimensional structure, the SFDG mimics the natural extracellular MTX, allowing cells to organize and form tissue-like structures. It also acts as a reservoir for biological signaling molecules, such as growth factors, which instructs cells to adopt specific tissue phenotypes and regulate their growth. The SFDG, along with cells and signaling molecules, creates an environment conducive to TE, facilitating the formation of functional and well-organized tissues.

Requirements for SFD for tissue engineering

An effective SFD for cell delivery requires specific qualities. It should possess the mechanical strength to protect cells from stresses while allowing biomechanical cues. The desired volume, shape, and strength are important, along with a highly porous structure that enables rapid tissue growth and high cell seeding densities. The SFD must be biocompatible, avoiding strong immunological or inflammatory responses. Additionally, it should support bio adsorption and provide physical structures that promote cell adhesion, interaction, and motility. These features are essential for a successful SFD in TE, facilitating cell integration and tissue formation [13, 14].

Requirements for SFD for drug delivery

A successful Scaffold for Drug Delivery (SFD) should possess key features for optimal drug delivery. It should enable uniform medication distribution, ensuring consistent drug release throughout its structure. The SFD should also have the capability to deliver the drug at a predetermined rate, allowing for controlled and sustained release. Additionally, the drug should remain stable within the SFD, retaining its therapeutic properties due to a low drug-binding affinity. Long-term stability, including biological activity, chemical structure, and physical parameters, is essential for reliable and effective drug delivery over an extended period. These characteristics collectively contribute to an efficient SFD for drug delivery applications [15, 16].

FORMULATION AND EVALUATION OF DEXTROMETHORPHAN LOADED POLYMERIC MICELLAR ORAL DISPERSIBLE TABLTES

P. Kavya[1], Pavankumar krosuri[1*]

Abstract

Dextromethorphan is a potent anti-tussive agent having low bio availability of 11%. The present research investigation was to prepare Polymeric micelles containing Dextromethorphan, nanotechnology-based drug delivery systems that enhance the solubility using different grades of Pluronic's F-68, F-188, F-407 respectively by solvent evaporation method. The Polymeric micelles so prepared were characterized for its particle size, Zeta potential, PDI, TEM analysis, Drug loading efficiency. Among various formulations PM9 showed greater drug loading efficiency i.e 90% and particle size of 50nm that will be further formulated into Oral Dispersible tablets using different super disintegrants like SSG, Cross povidone, Low- HPC, among various formulations F9 showed less disintegration time of 10 sec and maximum drug release of 98.89%. from the kinetic observations of optimized formulation F9, $R^2$of release data based on best curve-fitting method for selected ODT the drug release showed First order kinetics i.e R^2= 0.869 indicating that the drug release depends upon its concentration.

Keywords: Dextromethorphan, Polymeric micelles, nanotechnology, Oral dispersible tablets

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DOI: 10.48047/ecb/2023.12.si10.00277

Journal of Xidian University DOI:10.37896/jxu17.8/022 ISSN No:1001-2400

FORMULATION AND EVALUATION OF PINACIDIL TRANSDERMAL PATCHES

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The present research work is an attempt to formulate and evaluate matrix type Transdermal patches of Pinacidil monohydrate in order to improve patient compliance by sustaining its action and by avoiding its gastrointestinal side effects. Transdermal patches of pinacidil monohydrate were developed with different ratios of hydrophobic polymers like Eudragit RS 100 and Ethyl cellulose T 50 (EC) polymer combinations by solvent evaporation technique. The Fourier transform infrared (FTIR) spectroscopy was used to confirm compatibility and to rule out any possible interactions between drug and polymers. Seven Transdermal patch formulations (F1, F2, F3, F4, F5, F6 and F7) consisting Eudragit RS 100 and Ethyl cellulose T 50 in the ratios of 1:1,4:1,1:4,3:2 & 2:3 respectively were prepared. All formulations carried 4 % w/v of Tween 80 as penetration enhancer and 10 % w/v of Dibutyl phthalate as plasticizer in dichloromethane and methanol (4:1) solvent system. Data of *in vitro* release from patches were fit in to different equations and kinetic models to explain release kinetics. From the kinetic studies it was found that the drug release showed zero order kinetics indicating that the drug release does not depends upon its concentration .Combination of polymers Eudragit RS 100 and Ethyl cellulose T 50 (2:3) showed better release for sufficiently long time. The developed Transdermal films prolonged release for 24 hrs and thus found useful to improve the patient compliance of Pinacidil monohydrate.

Key words: Ethyl cellulose T50, Eudragit RS 100, *in vitro*, Solvent evaporation technique; Transdermal patch.

Introduction :

"Transdermal drug delivery systems are defined as self-contained, discrete dosage forms which, when applied to the intact skin, deliver the drug, through the skin, at a controlled rate to the systemic circulation".

Formulations on skin can be classified into two categories according to the target site of action of the containing drugs. One has systemic action after drug uptake from the cutaneous micro vascular network, and the other exhibits local effects in the skin .

In the past two decades, transdermal drug delivery has moved from a clinical reality to the point where it represents a viable diagnostic tool diagnosis. The first challenge of creating effective transdermal system ultimately involves ensuring adequate drug permeability through the stratum corneum (SC) .

Published online in http://ijam.co.in ISSN No: 0976-5921

International Journal of Ayurvedic Medicine, Vol 15 (1), 2024: 257-263

Evaluation and method development for quantification of Piperine in *Hutabhugadi Churna* by RP- HPLC

Research Article

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Abstract

Aim and Objective: The current work was aimed at preparing the *Hutabhugadi Churna* in the laboratory and evaluating the same including the method development for the estimation of a marker compound Piperine by using RP-HPLC. Methods: Prepared *Hutabhugadi churna* was subjected for macroscopic, physical, and chemical evaluation considering WHO guidelines. The methanolic extract was subjected for estimation of Piperine as marker using RP-HPLC. Results: The macroscopic characteristics like colour, odour and taste are recorded. The physical characteristics like loss on drying, ash value, extractive value, swelling index, foaming index, powder properties like angle of repose, bulk density, tapped density, compressibility index etc. were determined. Total phenolic content, total flavonoid content, preliminary phytochemical screening was also carried out. The results are compared with marketed formulation of *Hutabhugadi churna*. The retention time of the standard Piperine was found to be 5.517, while the Piperine in extracts of laboratory and marketed formulations was found to be was found to be 5.554 and 5.562 respectively. The concentration of Piperine in laboratory and marketed formulation was found to be 0.17 %w/w and 0.18 % w/w respectively. The method developed was also validated. Conclusion: The laboratory made *Hutabhugadi churna* and marketed formulation of *Hutabhugadi churna* was comparatively evaluated. The resulting data will be useful for the standardization of the Hutabhugadi churna, an Ayurvedic formulation.

Keywords: *Hutabhugadi churna,* Total phenolic content, Total flavonoid content, Preliminary phytochemical screening, Marker compound, RP-HPLC.

Introduction

Hutabhugadi churna is an Ayurvedic formulation reported in The Ayurvedic Formulary of India (1). It is also mentioned in *Sahasra yoga* and *Churnaprakarana*. The ingredients of *Hutabhugadi churna* (HC) include *Hutabhugadi* (*Plumbago zeylanica* L.), *Marica* (*Piper nigrum* L.), *Pippali* (*Piper longum* L.), *Ajamoda* (*Trachyspermum roxburghianum* (DC).), *Saindava lavanam* (Rock salt), and *Haritaki* (*Terminalia chebula* Retz). As per Ayurvedic Pharmacopoeia of India, it is an important formulation useful in treating digestive impairment (*Agni mandya*), oedema (*Sopha*), anemia (*Pandu*), and haemorrhoids (*Arsa*) (1).

Literature survey revealed the lack of standardisation data related to Hutabhugadi churna. The churna was screened for various pharmacological activities. Hence in the present study, the formulation was prepared in the laboratory and subjected to standardisation using various organoleptic, physical, and chemical evaluations. Further, the formulation was subjected to estimation of marker compound analysis using Piperine as a marker by RP-HPLC method. Compared the results with the marketed formulation of *Hutabhugadi churna*.

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Materials and methods

Preparation of *Hutabhugadi churna*:

Hutabhugadi Churna consists of 6 ingredients:

- *Plumbago zeylanica* L. (Chitrak),
- *Piper nigrum* L. (Marica),
- *Piper longum* L. (Pippali),
- *Trachyspermum roxburghianum (DC)* (Ajamoda),
- *Terminalia chebula* Retz (Haritaki), and
- Rock salt (Saindava lavana).

All the ingredients were procured from the local Ayurvedic shops. The identity of the drugs *Marica, Pippali,* and *Haritaki* was carried out in the laboratory as per Ayurvedic Pharmacopoeia of India. *Chitrak* was authenticated by Dr Madhava Chetty, a professor at the Department of Botany, Sri Venkateswara University Tirupathi. *Ajamoda* was authenticated at the National Institute of Science Communication & Policy Research (NISCPR), New Delhi. All the specimens are deposited in the college's Pharmacognosy laboratory for future reference.

separations

MDPI

Article

LC/MS-Based Profiling of *Hedyotis aspera* Whole-Plant Methanolic Extract and Evaluation of Its Nephroprotective Potential against Gentamicin-Induced Nephrotoxicity in Rats Supported by In Silico Studies

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Abstract: Many high-altitude plants, such as *Hedyotis aspera*, need to be explored for their possible medicinal value. The current study explored the protective effect of *Hedyotis aspera* methanolic extract whole plant (HAME) against gentamicin-induced nephrotoxicity in rats. It profiled their phytocontents using HPLC-QTOF-MS/MS analytic methods. The LC-MS analysis of HAME revealed 27 compounds. Eight compounds followed Lipinski's rule of five and were found to be potential TNF-α inhibitors with binding affinities of −6.9, −6.3, −6.3, and −6.3 Kcal/mol, such as 14,19-Dihydroaspidospermatine, coumeroic acid, lycocernuine and muzanzagenin. All potential compounds were found to be safe according to the ADMET analysis. The in vitro 2,2-diphenyl-1-picrlhydrazyl (DPPH) assay assessed the antioxidant activity. The nephroprotective activity was assessed in rats using a gentamicin-induced nephrotoxicity model. The in vivo analysis involved histological examination, tissue biochemical evaluation, including a kidney function test, catalase activity (CAT), reduced glutathione (GSH) levels, superoxide dismutase (SOD), and the inflammatory mediator TNF-α. Based on DPPH activity, HAME showed a scavenging activity IC_{50} of 264.8 ± 1.2 µg/mL, while results were compared with a standard vitamin C IC_{50} of 45 ± 0.45 µg/mL. Nephrotoxicity was successfully induced, as shown by elevated creatinine and uric acid levels, decreased kidney antioxidant levels, and increased TNF-α in gentamicin-treated rats. The HAME treatment significantly reduced serum creatinine and uric acid levels, increased GSH ($p < 0.01$ **), CAT ($p < 0.01$ **), and SOD ($p < 0.001$ ***), and decreased TNF-α ($p < 0.001$ ***) in nephrotoxic rats. The histopathological examination of the groups treated with HAME revealed a notable enhancement in the structural integrity of the kidneys as compared to the group exposed to gentamicin. Biochemical, histopathological, and phytochemical screening of HAME suggests that it has nephroprotective potential, owing to the presence of 14,19-Dihydroaspidospermatine, coumeroic acid, lycopene, and muzanzagenin.

Keywords: *Hedyotis aspera* whole-plant methanolic extract; molecular docking; Wistar rats; nephroprotective effect; gentamicin

Citation: Prasanth, D.; Reddy, L.S.S.; Dasari, T.; Bhavanam, P.R.; Ahmad, S.F.; Nalluri, R.; Pasala, P.K. LC/MS-Based Profiling of *Hedyotis aspera* Whole-Plant Methanolic Extract and Evaluation of Its Nephroprotective Potential against Gentamicin-Induced Nephrotoxicity in Rats Supported by In Silico Studies. *Separations* **2023**, *10*, 552. https://doi.org/10.3390/separations10110552

Academic Editor: Lina Raudonė

Received: 12 October 2023
Revised: 26 October 2023
Accepted: 29 October 2023
Published: 30 October 2023

Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v30i10.2426

ANALYTICAL METHOD DEVELOPMENT, VALIDATION AND STABILITY INDICATING STUDIES OF AVANAFIL BY USING RP-HPLC TECHNIQUE

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Abstract:
Objective: The project was aimed at developing an analytical method to quantify Avanafil drug either alone or in tablet formulation, including stability studies by practicing RP-HPLC technique.
Methods: The RP-HPLC technique was carried to work out an analytical method and inspecting consistency of the method by performing the different validation parameters. The degradation studies were performed under different physical and chemical conditions following the ICH guidelines. The column used was Inertsil ODS Column C_{18} (4.6×250mm)5µm.
Findings: In the course of stream lining the analytical method, we have clinched on to use the mobile phase with the combination of Methanol: 0.1% OPA (75:25v/v). The drug was detected at 246 nm in UV. The retention time was at 3.14 min and the linearity range of was from 0.5 µg/ml to 10µg/ml with the Regression coefficient calculated to be (R^2) 0.9978. The corresponding recognition limits (LOD and LOQ) was 0.02µg/ml and 0.08µg/ml respectively. Precision studies were carried out and the RSD values were found to be less than two. The degradation studies were successfully conducted.
Novelty: The significant advantages were reduction of retention time almost one minute less, the lower limit in linearity being at least 10 times less and the mobile phase used was quite cheaper than the reported methods. The other part was that, the usability of the method to quantify even though the drug was degraded nearly to 10 % in presence of the unknown degradants. The method is also sensitive, reproducible, quick and economical.

Keywords: Avanafil, Methanol, HPLC, Degradation studies, ICH Guidelines.

1. Introduction

The main objective of this project is to develop and validate a simple, precise and accurate method by using RP-HPLC method. Avanafil is chemically spelled as 4-{[(3-chloro-4-methoxyphenyl) methyl]amino}-2-[(2S)-2(hydroxymethylpyrrolidin-1-yl]-N-(pyrimidin-2-ylmethyl) pyrimidine-5

Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v30i10.2427

ANALYTICAL METHOD DEVELOPMENT, VALIDATION AND STABILITY INDICATING STUDIES OF SECNIDAZOLE IN API & PHARMACEUTICAL DOSAGE FORM BY USING RP-HPLC TECHNIQUE

K. Faiza Firdos[1], L. Siva Sanker Reddy[2]*, R. Nageswara Rao[3], S. Muneer[4], N. Madana Gopal[5], N. Yella Subbaiah[6], Shaik Ruksar[7], K. Maheshwari[8], C. Madhsudhana Chetty[9]

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Abstract:
The project was aimed at developing an analytical method to quantify Secnidazole drug either alone or in tablet formulation, including stability studies with the aid of RP-HPLC technique. An analytical method was finalised and inspected consistency of the method by performing the different validation parameters like system suitability, specificity, linearity, accuracy, precision, LOD, LOQ, Robustness and assay. The degradation studies were performed under different physical and chemical conditions by following the ICH guidelines. The column used was Inertsil ODS Column C_{18} (4.6×250mm)5µm of Shimadzu.

The HPLC was Shimadzu make with UV PDA detector and model 20AD. In the stream lining the analytical method, we have settled on to use the mobile phase with the combination of Methanol: 0.1% OPA (90:10 v/v). The drug was detected at 314 nm on UV-Visible spectrophotometer. The retention time was at 2.953 min with the run time of 10 min. The linearity range of Secnidazole was from 2 µg/ml to 10µg/ml and the Regression coefficient calculated to be (R^2) 0.999. The corresponding recognition limits (LOD and LOQ) of the Secnidazole was 0.3µg/ml and 0.9µg/ml respectively. Precision studies were carried out and the RSD values were found to be less than two. The degradation studies were successfully conducted. The significant advantages were reduction of retention time at 1ml/min and the mobile phase used was quite cheaper than the reported methods. The other part was that, the usability of the method to quantify even though the drug was degraded nearly to 10 % in presence of the unknown degradants. The method is also sensitive, reproducible, quick and economical.

Keywords: Secnidazole, Methanol, OPA, HPLC, ICH Guidelines, Secnil.

Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense*)

Lat. Am. J. Pharm. **42** (3): (2023)

Reverse Phase –Hplc Method Development, Validation And Stability Indicating Studies Of Deferasirox In Its Api And Pharmaceutical Dosage Form

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Abstract:

From the literature review, we have noticed the use of Acetonitrile, buffer and Ortho phosphoric acid(OPA) as the mobile phases for the analytical work of Deferasirox and the reported retention time was in between 8.7 to 6.4min at the flow rates of greater than 1ml/min. In the present work, we have used Methanol and 0.1% OPA (80:20v/v) as the mobile phase and the retention time was 6.2 minutes at the flow rates of 1.2ml/min. The Column was C18(4.6mm x 250mm:5µm) and detector was UV-PDA (λmax 247nm). Linearity concentrations were 10µg/ml to 50µg/ml(R2-0.9952). All the validation parameters and degradation studies complied with the limits of ICH Q2R1 guidelines. This developed method consumes nearly 50% less mobile phase with methanol and water containing OPA(0.1%) which are cheaper and environment friendly. Thus, the method can be advised to do the routine analysis of Deferasirox in its API and formulation.

Keywords: Deferasirox, Methanol, Validation, Ortho phosphoric acid.

Introduction

Deferasirox is a selective oral active chelator for iron (as Fe^{3-}). Deferasirox is designated chemically as a 4-[3,5-bis(2-hydroxyphenyl)-1,2,4-triazol-1-yl] benzoic acid. It is soluble in organic solvents such as Methanol, dimethyl formamide, practically insoluble in water. Deferasirox is a ferric iron non-chiral tridentate ligand; two molecules join with one Fe ion to create a complex. It is a very selective iron chelator that does not produce zinc or copper excretion. It is a powerful chelator that removes iron from the liver and heart, reversing hepatic fibrosis, and maintaining cardiac function. The empirical formula is $C_{21}H_{15}N_3O_4$ and molecular weight is 373.4g/mol. When compared to an intravenous dose, the absolute bioavailability (AUC) of Deferasirox tablets for oral suspension is 70%. Most of Deferasirox and its metabolites are eliminated in the faeces (84% of the dosage). Deferasirox and its metabolites are excreted in the urine in very small amounts (8% of the administered dose). Following oral dosing, the mean elimination half-life ($t_{1/2}$) varied from 8 to 16 hours[1-2].

plants

MDPI

Article

Unveiling the Cardioprotective Power: Liquid Chromatography–Mass Spectrometry (LC–MS)-Analyzed *Neolamarckia cadamba* (Roxb.) Bosser Leaf Ethanolic Extract against Myocardial Infarction in Rats and In Silico Support Analysis

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Citation: Kumar, R.N.; Prasanth, D.; Midthuri, P.G.; Ahmad, S.F.; Badarinath, A.V.; Karumanchi, S.K.; Seemaladinne, R.; Nalluri, R.; Pasala, P.K. Unveiling the Cardioprotective Power: Liquid Chromatography–Mass Spectrometry (LC–MS)-Analyzed *Neolamarckia cadamba* (Roxb.) Bosser Leaf Ethanolic Extract against Myocardial Infarction in Rats and In Silico Support Analysis. *Plants* **2023**, *12*, 3722. https://doi.org/10.3390/plants12213722

Academic Editors: Rosa Tundis and Monica Rosa Loizzo

Received: 10 October 2023
Revised: 25 October 2023
Accepted: 26 October 2023
Published: 30 October 2023

Abstract: *Neolamarckia cadamba* (Roxb.) Bosser, a member of the Rubiaceae family, is a botanical species with recognized therapeutic properties. It is commonly used in traditional medicine to treat cardiac ailments and other disorders. However, the precise active constituents and the potential mechanisms by which they manage cardiovascular disorders remain unclear. Therefore, this study aimed to ascertain the bioactive components and investigate their underlying mechanisms of action. *N. cadamba* is used to treat cardiovascular disorders using the integrated metabolomic methodology. An HPLC-QTOF-MS/MS analysis determined the potential chemicals in the *N. cadamba* leaf ethanol extract (NCEE). A thorough investigation of the NCEE samples used in this study led to the identification of 32 phytoconstituents. Of the 32 compounds, 19 obeyed Lipinski's rule of five (RO5). A molecular docking study directed towards HMG-CoA reductase used 19 molecules. The reference drug atorvastatin indicated a binding energy of −3.9 kcal/mol, while the other substances, Cinchonain Ib and Dukunolide B, revealed binding energies of −5.7 and −5.3 kcal/mol, respectively. Both phytocompounds showed no toxicity and exhibited favorable pharmacokinetic properties. In vivo study results concluded that treatment with NCEE significantly reduced the cardiac myocardial infarction (MI) marker CK-MB and atherogenic risk indices, such as the atherogenic index plasma (AIP), cardiac risk ratio (CRR), and atherogenic coefficient (AC) in isoproterenol-induced MI rats. In MI rats, NCEE therapy significantly improved the antioxidant system of the heart tissue, as evidenced by the increased levels of GSH and SOD, lower levels of the oxidative stress marker MDA, and significantly decreased HMG-CoA activity. Additionally, electrocardiogram (ECG) signals from rats treated with NCEE resembled those treated with traditional atorvastatin to treat myocardial infarction. This study used H&E staining to show that administering NCEE before treatment reduced cardiac myocyte degeneration in rats with myocardial infarction, increased the presence of intact nuclei, and increased myocardial fiber strength. The potential cardioprotective effect observed in

Est. 1984

ORIENTAL JOURNAL OF CHEMISTRY
An International Open Access, Peer Reviewed Research Journal

www.orientjchem.org

ISSN: 0970-020 X
CODEN: OJCHEG
2023, Vol. 39, No.(4):
Pg. 1040-1045

Analytical Method Development and Validation of Quetiapine Fumarate in API and Dosage form by Using RP–HPLC

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http://dx.doi.org/10.13005/ojc/390430

(Received: May 27, 2023; Accepted: July 30, 2023)

ABSTRACT

RP-HPLC method developed is a simple, precise and functional technique for the calculation of amount of Quetiapine fumarate from marketed tablets and bulk form. The RP-HPLC analysis was carried out on Hyper chrome ODS-BP 5µm column (4.6mm×200mm) using a mobile phase 0.1% Orthophoshoric acid and Acetonitrile (80:20v/v) with pH 5.5. Quetiapine fumarate quantified by using UV detector at 210nm. The retention time of the Quetiapine fumarate was found to be 2.6 minute. The linearity of the drug concentration ranges from 20-400µg/mL. The detection and quantification limits were intended at 3.70µg/mL and 12.35µg/mL. The precision, accuracy, specificity, robustness and degradation studies were validated.

Keywords: RP-HPLC, Quetiapine fumarate, Acetonitrile, 0.1% Orthophoshoric acid, Validation.

INTRODCUTION

Quetiapine Fumarate is an Anti-psychotic agent and Anti depressive agent. It is designated chemically as a 2-[2-(4-Dibenzo [b, f][1,4] thiazepin-11-yl-1-piperazinyl) ethoxy] ethanol. The drug's solubility is in methanol, Ethanol, Water and higher soluble under acidic condition with pKa value-15.12 and 7.02 strongly basic PKa, half-life 6 h protein binding-83%, route of administration is oral, metabolism in liver and excretion by kidneys. The entire work was planned according to the ICH guidelines[1]. HPLC methods were reported in various journals-assay method[2], stability indicating method[3], isocratic method[4], and other RP-HPLC methods were taken into consideration for this study[5-12]. Many UV methods also exist for the estimation of Quetiapine, which one is referred in this context[13].

Methodology

Preparation of standard solution for system suitability

Accurately weighed 10 mg of Quetiapine, transferred into volumetric flask of 10 mL capacity and required quantity of mobile phase (0.1% OPA: ACN 80:20v/v) used to make up to the mark. The solution sonicated to be affirmative that the drug was dissolved. This solution was marked as the

NOVASOMES – A NOVEL NANO VESICULAR CARRIERS

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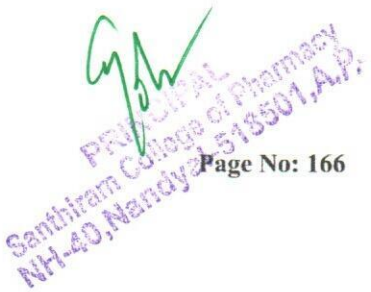
Abstract :
A new and exciting class of Nanovesicles called Novasomes is intended for the delivery of drugs. These lipid-base nanocarriers have increased encapsulation efficiency and stability, among other benefits. It is made up of seven bilayer membranes that can absorb both soluble and insoluble materials in water. It can be prepared by the combination of Liposomes and Niosomes. Because of their degree of penetration, they are referred to as derma cosmetics. Applications for novasome have been discovered in a number of industries, including dermatology, chemistry, pharmacy, people care, and cosmetics. It assists in resolving liposome stability issues. The adjuvant novasome enhanced protection and immunogenicity. This abstract delivers into the basic properties, composition, and potential uses of novasomes, emphasizing how they could transform the beauty and pharmaceutical industries by enabling more precise and targeted Drug delivery. One key area of study and development is the potential use of novasomes for medicine delivery and targeting.

Keywords: Novasomes, Lipid based nanocarriers, Nanovesicles, Targeted Drug Delivery.

Introduction

One could refer to novasomes as liposomes or niosomes with enhanced structures. The hydrophobic membrane core of liposomes, which are spherical vesicles with a membrane made of phospholipids and cholesterol, allows for the encapsulation of an aqueous solution region and the incorporation of lipid-soluble drugs between the two lipid layers. The non-ionic surfactant vesicles known as niosomes can develop in aqueous conditions with or without the presence of lipids such as cholesterol. Novasomes are described as paucilamellar vesicles with a diameter of 200–700 nanometers, composed of two to seven bilayered membranes. These membranes occupy a vast amorphous core that contains hydrophilic—that is, water soluble—and hydrophobic—that is, water insoluble—drug compounds. Novasome provides activity with a prolonged release.The majority of traditional medications have low absorption and generate harmful systemic side effects. Novel, highly complex targeted mechanisms are needed for medication administration in order to prevent such systemic toxicity. Vesicular drug delivery systems are a promising way to get beyond the limitations of the traditional drug delivery system in the current drug discovery system and provide significant drug bioavailability through regulated distribution of therapeutic medications over a longer period of time. The IGI laboratory Novavax produced the patented technique known as Novasome. A modification of other comparable drug delivery systems, or an invention of the liposomal drug delivery system, are novasomes.The innate stability of Novasome micro vesicles is engineered to withstand a pH



FORMULATION AND EVALUATION OF ENTACAPONE LOADED CUBOSOMAL SUSTAINED RELEASE TABLETS

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Abstract:
Entacapone is a Anti-parkinsonian agent used for the treatment of parkinson's disease having low bio availability of 35%. The present research investigation was to prepare Cubosomes containing Entacapone, nanotechnology-based drug delivery systems that enhances the solubility using different grades of Pluronic's F-68, F-188, F-407 respectively by Emulsification method. The Cubosomes so prepared were characterized for its particle size, Zeta potential, PDI, TEM analysis, Entrapment efficiency. Among various formulations F3 showed greater entrapment efficiency i.e 98% and particle size of 100nm that will be further formulated into Sustainedrelease tablets using different polymers like Locust bean gum, Karaya gum, Xanthan gum, among various formulations,F9 showed maximum drug release of 98.88%. from the kinetic observations of optimized formulation F9, R2 of release data based on best curve-fitting method for selected SR tablets the drug release showed First order kinetics i.e R2= 0.968 indicating that the drug release depends upon its concentrationand the diffusion exponent values from korsmeyer peppas model is 1.22 indicating that the drug release follows supercase II transport mechanism.
Key words: Entacapone, Cubosomes, Nanotechnology, Sustained release tablets.

Introduction:

Parkinson's Disease

Parkinson's disease, a degenerative condition, is brought on by the loss of nerve cells in the substantia nigra, a region of the brain that regulates movement. Parkinson's disease is a condition where the ability to create an essential neurotransmitter called dopamine is lost due to the death or impairment of these nerve cells. According to studies, people with a loss of at least 80% of the substantia nigra's dopamine-producing cells experience the onset of Parkinson's disease symptoms.

Larsson is the author of the term cubosomes, which is akin to liposomes. Cubosomes are discrete, sub-micron-sized nanostructured particles that are part of the bicontinous cubic liquid crystalline phase. The capacity of the bicontinous cubic phases to adjust membrane curvature is one benefit they are providing. Cubosomes are liquid crystalline particles that self-assembled and have a solid-like rheology. A quarter state of matter may be liquid crystals.
Lipids, polymers, and surfactants—which are typically amphiphilic—make up these cubosomes. In this context, the term "bicontinous" refers to a division of two distinct water enclosures by surfactant bilayers.

Chettinad Health City Medical Journal
Volume 13, Issue 1 - 2024, Pg. No. 4-12
Peer Reviewed & Open Access Journal

Research Article

A Prospective Observational Study on Assessment of Antibiotic Therapy in Renal Failure Patients with Infections

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DOI: https://doi.org/10.24321/2278.2044.202402

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How to cite this article:
Battula P, Savithri S, Poojitha K, Saivani Y. A Prospective Observational Study on Assessment of Antibiotic Therapy in Renal Failure Patients with Infections. Chettinad Health City Med J. 2024;13(1):4-12.

Date of Submission: 2023-05-05
Date of Acceptance: 2024-01-18

A B S T R A C T

Introduction: The combination of renal failure and infections is the primary cause of death. Effective drug treatment is crucial for managing these conditions and reducing illness and death risks.

Aim: The study aims to identify the type of microorganism causing kidney or renal infection, its sensitivity patterns and to assess the type of antibiotic prescribed in renal failure patients with infections.

Methods and Material: The study was conducted at Santhiram Medical College and General Hospital in Nandyal between November 2021 and April 2022. The study aimed to analyse the cases of 130 patients diagnosed with renal failure diseases and accompanying infections in the nephrology department. The study prospectively collected demographic data, diagnosis information, prescribing patterns, and culture sensitivity reports.

Results: In this study, males exhibited a higher likelihood of developing renal failure diseases, with an incidence rate of 65%, compared to females, who showed an incidence rate of 45%. Individuals who were 61–70 years old, regardless of gender, were at a heightened risk of developing renal failure diseases. The study also revealed the presence of 8 distinct microorganisms, with *E. coli* being the most prevalent cause of infection, contributing to 34.61% of cases.

Conclusions: Our research determined that infections in patients with renal failure are primarily caused by *E. coli* and Klebsiella microorganisms. Treatment typically involves prescribing antibiotics, with cefoperazone and sulbactam being commonly used. However, it was observed that doxycycline and levofloxacin are ineffective against all microorganisms. By analysing the total white blood cell count, it has been determined that cefoperazone-sulbactam is a more effective antibiotic for reducing infections.

Keywords: Acute Renal Failure, Antibiotics, Chronic Kidney Disease, Culture Sensitivity, Renal Failure

Indian Journal of Natural Sciences www.tnsroindia.org.in ©IJONS

Vol.15 / Issue 84 / Jun / 2024 *International Bimonthly (Print) – Open Access* *ISSN: 0976 – 0997*

RESEARCH ARTICLE

Efficacy of Hypoglycaemic Agents in Type-2 Diabetes Mellitus with Associated Co-Morbidities: A Prospective Observational Study

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Received: 17Aug 2023 Revised: 20 Mar 2024 Accepted: 24 May 2024

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ABSTRACT

Diabetes mellitus has been a known disease for a long time and has now become a modern-day epidemic, recognized as a global health issue. Our study aimed to bring attention to the current prescribing trends and effectiveness measures for type 2 diabetes mellitus patients with co-morbid conditions. The study was conducted for six months; the Department of General Medicine at Santhiram Medical College and General Hospital conducted an observational study based in the hospital. The study analysed prescriptions for 165 patients, of which 63.03% were males and 36.9% were females. The majority of the patients were between the ages of 51 and 65. It is essential to note that Hypertension and Diabetes were often co-morbid, with the latter affecting a significant proportion of the global population. Of the various oral hypoglycaemic agent combinations available, the metformin-glimepiride 2mg combination is the most commonly prescribed, accounting for 19.39% of such prescriptions. Additionally, Metformin is the most widely prescribed drug among oral hypoglycaemic agents. When it comes to managing diabetes mellitus, experts recommend the use of combination therapy. Our recent study has

Est. 1984

ORIENTAL JOURNAL OF CHEMISTRY
An International Open Access, Peer Reviewed Research Journal

www.orientjchem.org

ISSN: 0970-020 X
CODEN: OJCHEG
2023, Vol. 39, No.(3):
Pg. 736-745

Design of Experiment Approach for Method Development and Validation of Bilastine in Pure and Pharmaceutical Dosage form using RP-UFLC

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http://dx.doi.org/10.13005/ojc/390325

(Received: May 29, 2023; Accepted: June 10, 2023)

ABSTRACT

Background: Bilastine is a H1 receptor antagonist, used in the treatment of allergic urticaria, seasonal rhinitis, etc. Few journals have reported the analytical related work on bilastine drugs. Objective: The objective of the work is to develop a simple, precise, rapid, and reproducible method using design of experiments (DOE) and check the optimized conditions when run on UFLC would give the best method or not. Results: The DOE software was used to select optimized conditions with minimal runs. The central composite design was the best fit, with two variables that include flow rate and column temperature. A total of 13 runs gave optimum conditions of 1.2 mL/min flow rate, column temperature of 40°C and mobile phasemethanol: buffer (pH 6.0) in the ratio of 70:30 in the binary mode using the Shimadzu C18 column on an HPLC instrument. The retention time of bilastine was found to be 5.126min, the number of theoretical plates and asymmetric factor being within the limit. The proposed method was validated as per the ICH Q2R1 guidelines. The linearity was found to be in the range of 1.25 µg/mL-10 µg/mL. The correlation coefficient was found to be within the limits i.e., R^2=0.999. The accuracy of the current method was being performed using the %recovery at three stages 50%, 100%, and 150% and was found to be 99.5126%, 100.2765% and 99.6714% respectively. The LOD and LOQ of bilastine was found to be 0.292 µg/mL and 0.974 µg/mL. Conclusion: The DOE software reduced the number of trials, saving both time and solvent consumption. This method can be conveniently used with confidence for regular assay, which is a simple, precise, rapid, and reproducible one for the estimation of bilastine in pure and pharmaceutical tablet dosage form using UFLC.

Keywords: Bilastine, KH_2PO_4, RP-UFLC, ICH Q2R1 guidelines, DOE and Validation parameters.

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Article

Unveiling the Cardioprotective Power: Liquid Chromatography–Mass Spectrometry (LC–MS)-Analyzed *Neolamarckia cadamba* (Roxb.) Bosser Leaf Ethanolic Extract against Myocardial Infarction in Rats and In Silico Support Analysis

Raghupathi Niranjan Kumar [1], Dsnbk Prasanth [2], Praisy Gladys Midthuri [1], Sheikh F. Ahmad [3], Attuluri Venkata Badarinath [4], Srikanth Kumar Karumanchi [5], Ramanjaneyulu Seemaladinne [6], Rahul Nalluri [7] and Praveen Kumar Pasala [8,*]

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Citation: Kumar, R.N.; Prasanth, D.; Midthuri, P.G.; Ahmad, S.F.; Badarinath, A.V.; Karumanchi, S.K.; Seemaladinne, R.; Nalluri, R.; Pasala, P.K. Unveiling the Cardioprotective Power: Liquid Chromatography–Mass Spectrometry (LC–MS)-Analyzed *Neolamarckia cadamba* (Roxb.) Bosser Leaf Ethanolic Extract against Myocardial Infarction in Rats and In Silico Support Analysis. *Plants* **2023**, *12*, 3722. https://doi.org/10.3390/plants12213722

Academic Editors: Rosa Tundis and Monica Rosa Loizzo

Received: 10 October 2023
Revised: 25 October 2023
Accepted: 26 October 2023
Published: 30 October 2023

Abstract: *Neolamarckia cadamba* (Roxb.) Bosser, a member of the Rubiaceae family, is a botanical species with recognized therapeutic properties. It is commonly used in traditional medicine to treat cardiac ailments and other disorders. However, the precise active constituents and the potential mechanisms by which they manage cardiovascular disorders remain unclear. Therefore, this study aimed to ascertain the bioactive components and investigate their underlying mechanisms of action. *N. cadamba* is used to treat cardiovascular disorders using the integrated metabolomic methodology. An HPLC-QTOF-MS/MS analysis determined the potential chemicals in the *N. cadamba* leaf ethanol extract (NCEE). A thorough investigation of the NCEE samples used in this study led to the identification of 32 phytoconstituents. Of the 32 compounds, 19 obeyed Lipinski's rule of five (RO5). A molecular docking study directed towards HMG-CoA reductase used 19 molecules. The reference drug atorvastatin indicated a binding energy of −3.9 kcal/mol, while the other substances, Cinchonain Ib and Dukunolide B, revealed binding energies of −5.7 and −5.3 kcal/mol, respectively. Both phytocompounds showed no toxicity and exhibited favorable pharmacokinetic properties. In vivo study results concluded that treatment with NCEE significantly reduced the cardiac myocardial infarction (MI) marker CK-MB and atherogenic risk indices, such as the atherogenic index plasma (AIP), cardiac risk ratio (CRR), and atherogenic coefficient (AC) in isoproterenol-induced MI rats. In MI rats, NCEE therapy significantly improved the antioxidant system of the heart tissue, as evidenced by the increased levels of GSH and SOD, lower levels of the oxidative stress marker MDA, and significantly decreased HMG-CoA activity. Additionally, electrocardiogram (ECG) signals from rats treated with NCEE resembled those treated with traditional atorvastatin to treat myocardial infarction. This study used H&E staining to show that administering NCEE before treatment reduced cardiac myocyte degeneration in rats with myocardial infarction, increased the presence of intact nuclei, and increased myocardial fiber strength. The potential cardioprotective effect observed in

WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES

SJIF Impact Factor 8.025

Volume 13, Issue 10, 529-542 Research Article ISSN 2278 – 4357

OBESITY-ASSOCIATED DIABETES MELLITUS AND ITS HEALTH-RELATED OUTCOMES IN A TERTIARY CARE CENTER

Mulla Saddar Basha[1]*, C. Bhargava Reddy[1], Katama Ediga Krishnamurthy[1], N. V. Naga Dharani[1], P. Bhagya Lakshmi[1] and G. Vijay Kumar[2]

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Article Received on
02 August 2024,

Revised on 23 August 2024,
Accepted on 12 Sept. 2024

DOI: 10.20959/wjpps202410-28274

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ABSTRACT

Background: The current study aims to evaluate prevalence of Obese-diabetics, Diabetes Mellitus risk factors and complications by assessing prescription and lifestyle modifications along with the SF–36 questionnaire, which measures Quality of Life. **Materials and Methods:** This study was a cross-sectional observational study. Patients are selected and categorized based on their Body Mass Index score and questioned about Diabetes Mellitus risk factors and complications. Patients' Quality of Life is assessed using the SF-36 questionnaire, which contains eight specific sub-domains, and one additional item (Health change status). A Higher SF-36 score indicates better functioning and suggests the best Quality of Life of patients. **Results:** The prevalence of Obese-diabetic patients is 136(56.43%). The risk factors of Diabetes Mellitus are observed, which shows individual Prevalence for factors like Alcohol 60(24.9%), Smoking 57(23.65%), Low physical activity 193(80.08%), Blood pressure 74(30.71%), and Age 194(80.5%). The complication of Diabetes Mellitus was observed which shows individual Prevalence for Cardiovascular Diseases 23(9.54%), Nephropathy 23(9.54%), Retinopathy 111(46.06%), and Limb Amputation 4(1.66%). Quality of Life of patients is significantly associated with physical functioning, emotional problems, energy, pain, and social functioning. **Conclusion:** Quality of Life is significantly associated with Gender, Education, Occupation and dietary habits of obese-diabetic people. Clinical pharmacist intervention assistance is required to improve the quality of life of Obese-diabetic patients to reduce further