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Synthesis and Anti Convulsant Activity of "*N*'-{4-[2-(1*h*-Benzimidazol-2-Yl)-2-Oxoethyl] Phenyl}-2-Hydroxyacetohydrazide and Its Derivatives"

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Abstract **Introduction:** Benzimidazole is a heterocyclic hydrocarbon having unique basic structural characteristics in their structure. This moiety was formed by using aromatic benzene and imidazole heterocylic ring. This molecule gives great application in biological and clinical studies. Benzimidazole and its derivatives have versatile Nitrogen containing heterocyclic compounds that give a promising category of biologically active compounds and possess a wide selection of biological activities like antibacterial drug, medicament, anti-ulcer, anti-diabetic, etc. **Objective:** Several scientists have declared that benzimidazole system possesses the variable sites like the position of a pair and five which might be fittingly changed to yield potent therapeutic agents. The current review covers the chemistry and medicine activities of substituted benzimidazoles. **Materials & Methods:** Formic acid; Acetyl Chloride; Hydrazine; Benzene-1,2-diol; Glycolic Acid; Benzoyl Chloride; Methyl Chloride; Ethyl Chloride; Benzamide etc. and methods are TLC, IR spectra, ^{1}H-NMR and MS. **Results & Conclusion:** The pharmacological screening was done by PTZ Induced Convulsion Method for anticonvulsant y. The synthesize compounds were established to be BK. The compound BA, BC, BJ, BI and BK were ished to be the most potent compound through the comparison with standard drugs phenytoin. Synthesized newer benzimidazole derivatives were screened for Anti-convulsant activity. It was seen that in biological activity, derivatives containing 2-nitro aniline and 3-nitro aniline have more significant biological activities than other benzimidazole derivatives. Total 11 compounds (4 Step Products + 7 Benzimidazole Derivatives) were evaluated for their biological screening.

Keywords Benzimidazole, Hydroxy Acetic Acid, Benzene-1, 2-diol, 2-Nitro Aniline, PTZ, Anti Convulsant Activity

1. Introduction

The benzimidazole nucleus was discovered in 1944. It contains benzene and imidazole ring fused together. Its structure is similar to purine [1]. Benzimidazole contains vital heterocyclic nucleus with a wide selection of pharmacologic applications. The primary benzimidazole was ready in 1872 by the soul Hoebrecker [2]. Benzimidazoles contain an atom such as Nitrogen attached to hydrogen at 1-position (see Fig. 1). The benzimidazoles

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In silico ADMET screening & molecular docking of some 1-(5-(4-chlorophenyl)-1,3,4-oxadiazol-3(2H)-yl) ethanone derivatives to be developed as triple mutant T790M/C797S EGFR inhibitors

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***Abstract*---** EGFRs' high expression and/or adaptive activation coincides with the pathogenesis and development of many tumors, making them appealing candidates for both diagnosis and therapy. Several strategies for targeting these receptors and/or the EGFR-mediated effects in cancer cells have been established. A lot of in silico models are developed for prediction of chemical ADMET properties. However, it is still not easy to evaluate the drug-likeness of compounds in terms of so many ADMET properties. In present study, we have designed some 1-(5-(4-chlorophenyl)-1, 3, 4-oxadiazol-3(2H)-yl) ethanone derivatives to be developed as potential EGFR inhibitors for the treatment of cancer. The designed derivatives were screened through Lipinski rule, Veber's rule, ADMET analysis, drug-likeness properties and molecular docking. We concluded that all the compounds sm1, sm2, sm3, sm8, sm9, sm10, sm11, sm12, sm13, sm14, sm15, sm18, and sm19 were found to possess drug-likeness properties and therefore were subjected for molecular docking studies. From molecular docking studies it was observed that Molecules Sm3, Sm8, Sm9, Sm10, Sm12, and Sm2 had formed either three or two conventional hydrogen bonds with EGFR enzyme and hence selected for synthesis which can be developed further to get more promising molecules for the treatment of cancer.

***Keywords*---**EGFR, angiogenesis, cancer, ADMET, molecular docking.

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In silico Exploration of some methyl 2-(4-(1H-pyrazol-5-ylamino)phenylthio)-1,2,3,4-tetrahydro-6-methylpyrimidine-5-carboxylateDerivatives to be developed as Potential EGFR inhibitors

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Abstract

Many cancers' pathophysiology and progression correspond with EGFRs' high expression and/or adaptive activation, making them attractive targets for diagnostics and treatment. Various methods have been developed for inhibiting these receptors and/or EGFR-mediated actions in cancer cells. With the purpose of predicting the ADMET characteristics of compounds, a large number of *in silico* models have been constructed. However, it is still not easy to evaluate the drug-likeness of compounds in terms of so many ADMET properties.In present study, we have designed some methyl 2-(4-(1H-pyrazol-5-ylamino) phenylthio)-1,2,3,4-tetrahydro-6-methylpyrimidine-5-carboxylatederivativesto be developed as potential EGFR inhibitors for the treatment of cancer. The designed derivatives were screened through Lipinski rule, Veber's rule, ADMET analysis, drug-likeness properties and molecular docking. From above screening it was observed that native ligand formed three conventional hydrogen bonds and exhibited -8.3 kcal/mol binding affinity therefore, the molecules which formed three or more conventional hydrogen bonds and exhibited > -8.3 kcal/mol binding affinity with enzyme are considered as most potent and selected for wet lab synthesis followed by biological evaluation. Molecules **sm21, sm23, sm24, sm25, sm26, sm27, sm28, sm29,** and **sm36** had formed either three or more conventional hydrogen bonds with EGFR enzyme and hence selected for synthesis.

Keywords: EGFR, angiogenesis, cancer, ADMET, molecular docking

1. Introduction

Although radiation and chemotherapy may be used to treat a broad range of cancers, molecular targeting drugs can be more precisely directed at certain subtypes of tumors. Throughout the last several decades, researchers have made strides in understanding the interplay between cancer's cellular, metabolic, and genetic origins and development[1]. This newfound knowledge has led to the development of more tumor-specific anticancer therapies. Tyrosine kinases are often used as therapeutic targets because of their association with tumor formation and proliferation. Inhibitors of tyrosine kinases (TKIs) prohibit the related kinases from phosphorylating the tyrosine residues of their substrates, hence preventing the activation of downstream signaling cascades[2]. Over the last two decades, a number of robust and well-tolerated TKIs targeting single or multiple targets, such as EGFR, ALK, ROS1, HER2, NTRK, VEGFR, RET, MET, MEK, FGFR, PDGFR, and KIT, have been developed, advancing our understanding of precision cancer medicine based on a patient's genetic alteration profile[3]. The epidermal growth factor receptor (EGFR) has been identified as a molecular target for certain potential cancer therapies. Four transmembrane tyrosine kinases (EGFR1/ErbB1, Her2/ErbB2, Her3/ErbB3, and Her4/ErbB4), as well as thirteen secreted polypeptide ligands, make up the EGFR family[4]. Multiple solid tumours, including

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Advances in Bioresearch

ORIGINAL ARTICLE

Synthesis, Characterization, and Anticancer activity of some 1-(5-(4-chlorophenyl)-1,3,4-oxadiazol-3(2*H*)-yl)ethanoneDerivatives as Potential EGFR inhibitors

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ABSTRACT
In present study, 1-(5-(4-chlorophenyl)-1,3,4-oxadiazol-3(2H)-yl)ethanone derivatives were synthesized, characterized, and evaluated for anticancer activity. All of the synthetic compounds were put through a screening process to see whether or not they were able to inhibit EGFR kinase activity. Erlotinib was used as the reference molecule in this method.Sm9 and Sm12 compounds were found to be the most active EGFR inhibitor that exhibited 76.28 and 84.92% inhibition of AKT kinase activity at 10 µM.Compounds Sm9, and Sm12 showed excellent EGFR kinase inhibitory activity with GI_{50} of 4.17 ± 0.56, and 1.68 ± 0.13 µM respectively, whereas erlotinib displayed 0.43 ± 0.18 µM. The cytotoxicity of synthesized compounds was evaluated against three cancerous cell lines skin (A-431), kidney (A-498), and lung (A549) via SRB assay. Molecules displaying >50% inhibition at 10 µM.Sm9 displayed GI_{50} values of 12.85±0.027, 9.72±0.038, and 9.52±0.035µM, respectively against A-431, A-498, and A-549. Sm12 showed GI_{50} values of 11.14±0.017, 6.67±0.023, and 8.13±0.039µM respectively, against A-431, A-498, and A-549 whereas erlotinib showed 6.611±0.024, 5.71±0.033, and 7.20±0.041µM. Therefore, based on the results of this investigation, we came to the conclusion that Sm9 and Sm12 have the ability to be considered as possible lead compounds for the continued development of a powerful EGFR inhibitor as a potential anticancer drug.
Keywords: *Anticancer; EGFR inhibitors; A-431; A-498; A-549; cell lines*

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INTRODUCTION

EGFR (epidermal growth factor receptor) inhibitors are used in the treatment of cancer because they target a specific protein that plays a critical role in the growth and proliferation of cancer cells. The EGFR protein is found on the surface of cells and is involved in signaling pathways that promote cell growth and division[1]. In cancer cells, the EGFR protein can be overactive, leading to uncontrolled cell growth and proliferation. EGFR inhibitors work by binding to the EGFR protein and preventing it from activating downstream signaling pathways that promote cell growth and division. This can cause cancer cells to stop growing and eventually die. EGFR inhibitors are used to treat several types of cancer, including non-small cell lung cancer, colorectal cancer, and head and neck cancer. They are often used in combination with other cancer treatments, such as chemotherapy, radiation therapy, and surgery. They are also used as maintenance therapy to help prevent cancer recurrence[2–5].EGFR inhibitors have been found to be particularly useful in treating certain types of cancer that have specific mutations in the EGFR gene. For example, the presence of a specific mutation called the T790M mutation in the EGFR gene has been found to confer resistance to first- and second-generation EGFR inhibitors. Fourth-generation EGFR inhibitors have been developed to target these specific mutations and thus overcome resistance.In summary, EGFR inhibitors are used in the treatment of cancer because they target a specific protein that plays a critical role in the growth and proliferation of cancer cells, and they have been found to be particularl
treating certain types of cancer that have specific mutations in the EGFR gene[6–10]. Fourth-g

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AN OVERVIEW OF 1,3,4- THIADIAZOLE ANALOGUES

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ABSTRACT-

A five-membered ring with two adjacent nitrogen atoms forms a pyrazole. Antipyrine, discovered by Knorr in 1883, marked the beginning of pyrazole chemistry. Since then, a large number of new derivatives have been discovered and tested for their biological potency, including their ability to perform various functions such as anticancer, anti-inflammatory, analgesic, antihypertensive, antipyretic, and antibacterial effects. Over-the-counter drugs with therapeutic potential include sildenafil, Celebrex, zometapine, fipronil, rimonabant, and lonazolac. Aspirin, ibuprofen, fenbufen, diclofenac sodium, indomethacin, and the COX-2 inhibitors celecoxib, etoricoxib, meloxicam, and other similar derivatives are examples of nonselective COX inhibitors commonly used as NSAIDs. . There are continuing reports that optimized 1,3,4-thiadiazole anti-inflammatory compounds have been synthesized or modified. Most of them are currently used clinical drugs fortified with 1,3,4-thiadiazoles. Azole compounds include thiadiazoles. These five-membered heterocycles have two nitrogen atoms and one sulfur atom. The nomenclature used by Hantzsch and Widman in which two double bonds form an aromatic ring has led to the name 'thiadiazole'. Freud and Kuhn first revealed the properties of ring systems in 1890, while Fischer introduced thiadiazoles in 1882.

Keywords- Pyrazole, Thiadiazole, Synthesis, application.

INTRODUCTION-

Thiadiazoles fall under the category of azole compounds. These five-membered heterocyclic compounds have two nitrogen atoms and one sulfur atom. Two double bonds created an aromatic ring, and the name "Thiadiazole" comes from the nomenclature used by Hantzsch and Widman. Although Freud and Kuhn first showed the nature of the ring system in 1890, Fischer first described thiadiazole in 1882. 1, 3, and 4-thiadiazole are chemical compounds that are structurally related to thiadiazole (two nitrogen and one sulfur heteroatom in a five-membered cyclic ring). This structure is displayed [1].

Thiadiazole essentially comes in four isomeric forms. A highly useful isomeric form is 1, 3, and 4, w y of biological effects on the body. Thiadiazole derivatives with structural substitutions have also been di ss a variety of therapeutic properties, including analgesic, antimicrobial, antitubercular, anticon activities. More and more microbial strains that are resistant to antibiotics are being dis mortality is being caused by multidrug-resistant microbe infections. The issue of microbial

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Phytochemical and Pharmacological Review of *Sesbania grandiflora*

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ABSTRACT:
There are around 60 global species including genus *Sesbania,* which are commonly available. The leaves of *Sesbania grandiflora* is used as local traditional medicine. Most of all parts of plant of *S. grandiflora* are used in traditional medicine as well as phytochemical investigations, seeds and roots of *Sesbania grandiflora* to provide scientific validation of its properties. The family of *Sesbania grandiflora* is fabaceae and is widely used as a traditional Indian medicine. The common name of plant *Sesbania grandiflora* is Agate, as well as crook wood. Various chemical constituents present in plant contain tannins, coumarone, steroids, tri-terpenes, iosflavanoids, isovestitol, and sativan and betulinic acid, flavanoid and medicarpin. The plant mainly use for colic disorder, jaundice, small pox, catarrh, headache, epilepsy. Flower juice is mainly used for eye disease.

KEYWORDS: *Sesbania grandiflora*, fabaceae, phytochemical profile, Traditional uses Pharmacological activities.

INTRODUCTION:

Medicinal plants have great importance for individual in their health. Most of the medicinal plants are used as food plants as well as a nutritional purpose[8]. *Sesbania grandiflora* is a plant belongs in family fabaceae and is commonly known as agate or hummingbird tree. Plant mainly seen in India, Malaysia, Indonesia and Philippines. *Sesbania grandiflora* species mainly soft, semi or slightly woody, and the height of plant is 1-4m tall, having a red white flower with diameter up to 10cm. The quality of wood is very low. The growing rate of plant is about 3 to 4 years after planting. *Sesbania grandiflora* tree provides forage, firewood, pulp and paper, food, green manure and landscape decoration. The *Sesbania grandiflora* flower, pods as well as leaves are eaten as a vegetable in daily diet (1and 2). White flower of *Sesbania grandiflora* is non-toxic and purple flower is toxic[3].

The all parts of plant *Sesbania grandiflora* contain a tannins, flavanoid, coumarone, steroids, triterpens, alkaloids, etc[9]. The flowers and leaves of the plant contain high quantity of vitamins and minerals. The plant mostly reported for anti-inflammatory, analgesic and antipyretic effects. Leaves of *Sesbania grandiflora i*ssued for the remedy for thrombosis, diarrhea, and inflammatory diseases and against few important bacterial pathogens[6,7]. The bark also reported for the astringent tonic, infusion for small pox and other eruptive fevers, also Used for the treatment of ulcers in the mouth and alimentary canal, diarrhea, dysentery and dyspepsia[4]. *S. grandiflora* leaves juice has reported for the treatment of bronchitis, cough, vomiting, wounds ulcers, diarrhea, and dysentery. The flowers of plant are used for the antimicrobial activity. The root powder of this plant are used in form of pest by mixing in water and applied externally as a poultice or rub for rheumatic swelling[5].

Plant Profile:

Sesbania Grandiflora:

The name of plant: *Sesbania grandiflora* L.
Common name: Agate, hummingbird tree.
English name of the plant: *Sesban, Swamp pea*.

Traditional or Ayurveda name: *Vakrapushpa, kumbha, Agastya.*

Biological source of the plant: it contains of dry leaves of *Sesbania grandiflora* L. and plant belongs in family fabaceae[10].

Botanical Description:

The plant having a height is about 6 to 9 meter and 0.6 meter in girth. *Sesbania* plant is short lived and quick growing plant. The wood of plant is soft. The leaves of plant are long about length id 15 to 30cm long. The structure of leaves is abruptly pinnate, and having about 41 to 61 leaflets: which having a structure like linear-oblong, deciduous. Plant having flowers which length is 6 to 10cm long. The petals of flower are slightly fleshy having different colors contains white, pink, and red. Fruit of plant also called pod having a length 30cm or more long in that about 15 to 50 seeds were present[1-2].

Taxonomical Description:[11]

Kingdom: Plantae.
Subkingdom: Tracheobionta.
Division: Magnoliophyte.
Class: Magnoliopsida.
Subclass: Rosidae.

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Design, Synthesis and Antibacterial Evaluation of some new 2, 5-disubstituted 1, 3, 4-oxadiazole derivatives

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ABSTRACT

Compounds containing 1,3,4-Oxadiazole nucleus investigated for CYP51 inhibitory activity. Current research work describes the designing, molecular docking, synthesis and structural elucidation of certain new 2,5-disubstituted 1,3,4-Oxadiazole derivatives investigated for antimicrobial activity. Series of the 2,5-disubstituted 1,3,4-Oxadiazole derivatives were designed and show good *in silico* ADME properties. The molecular docking study was done by Autodockvina software exploring better interaction with target protein and could be the potent inhibitor of ergosterol biosynthesis. The novel 2,5-disubstituted 1,3,4-Oxadiazole derivatives synthesized by conventional heating method as well as microwave irradiation method. The microwave assisted synthesis remarkely higher yield at less time compared to conventional synthesis. Structural elucidation was done by FTIR, ^{1}H NMR and Mass spectroscopy. The synthesized compounds subjected to *in vitro* antimicrobial activity by agar diffusion method and all compounds show good inhibition of bacterial growth.

Keywords: *In silico*ADME, Molecular Docking, Synthesis, 1,3,4- Oxadiazole, Antimicrobial Activity.
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BACKGROUND AND AIM OF THE WORK

Microbial infections treatments is increasingly complicated by the ability of bacteria to develop resistance to antimicrobial agents (1). Microorganisms have become resistant to currently used antibiotics due to poor infection treatment, over-prescription of antibiotics, and their inappropriate use by patients. This challenges treatment even though previously used antibiotics or antimicrobial drugs are no longer effective, and infections become progressively difficult to treat (2).Drug-resistant bacteria that have spread and developed new resistance mechanisms, resulting to bacterial resistance, continues to cause serious harm to our capacity to treat common diseases. The increasing global development bacterial resistant, which spread disease that are not treatable with the existing antimicrobial medications such as antibiotics (3). 1,3,4-oxadiazole heterocyclic ring shows a lots of therapeutic and biological activities like antimicrobial, anticonvulsant, antitcancer, antipyretic, anti-viral, spasmolytic, antioxidant, anti-inflammatory, insecticidal, CNS stimulant, antiemetic, antidepressant, anthelmintic activities, vasodilator activity and antihypertensive activities (4) The presence of toxophoric –N=C–O– linkage might be responsible for potent pharmacological activities. 2,5-disubstituted-1,3,4-oxadiazole derivatives are stable in which 2,5-diaryl-1,3,4-oxadiazoles are more stable than the 2,5-dialkyl derivatives (5). The 2,5-disubstituted 1,3,4-Oxadiazole derivatives were designed by considering its pharmacophore properties. The various substitutions were used at position 2 and 5 to synthesize 2,5-disubstituted 1,3,4-Oxadiazole

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GLYCYRRHIZA GLABRA LINN: PLANT PROFILE, MEDICINAL USE, AND EFFECT OF LICORICE IN DIFFERENT DISEASES REVIEW

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ABSTRACT

The plants have one of the most useful sources of medicine the human planting. It has a growing application for plant base medicine, health products, pharmaceuticals, neutraceuticals, food compliments and for cosmetic preparation, the nature has always been an a private source of many therapeutic compound providing with many medicine plant and micro organisms providing advantageous chemicals one corresponding plants from leguminosae family is licorice and the scientific name *is glycyrrhizin glbra* Linn . The herd is having the vegetative medicinal value. These several compounds such as glycrrihzincyrrihiza glabra having pharmacological well being to us with anticancer, antiatherogenic., isoliquritine, a glycyrrhizinic acid, isoliquritine and glycyrrizinc acid have been demolished in plants. These glyntidiabetic, antiastamatic, anti-inflammatory, antimicrobial and antiplasmodic activity. Administration revealed that the presence of Flavonoids, tannins, steroids, saponnins, glycosides, proteins and sugar. The results are very encouraging and indicates this herb should be studies more considerably to confirm these result and revel the potential therapeutic effects.

KEYWORDS: Glycyrrhiza glabra, Pharmacological action, Medicine, Licorice.

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REVIEW ON HERBAL NANOPARTICLES METHODS

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ABSTRACT

Nanoparticles is the newly discovered technology in the drug discovery and it has the property of self-targeting in the sense that without the bond of a specific ligand, the nanoparticles can be used for targeting, due to their recognizable small size, at the infected pathological areas. Drug delivery system fetched a novel drug delivery system, a novel approach to overcome the disadvantages of the traditional drug delivery systems. Treatment of chronic diseases such as cancer using targeted drug delivery nanoparticles is the latest attainment. By study the relationship between nanotechnology as well as biological medicine, the application of nanotechnological methods for bioavailability enhancement of herbal drugs can be conduct about. "Bhasma", a natural product, is a metallo-medicine in powder form of nano to submicron size. At present, several nano drugs are under examination for drug delivery and more specially for cancer therapy. Interestingly, pharmaceutical sciences are using nanoparticles to decrease toxicity and unwanted secondary effect of drugs.

Keywords: Nanoparticles, Nanotechnology, Drugs, Ayurveda, Formulations, Formulations.

I. INTRODUCTION

Nanoparticles: Nanoparticles are particles between 1 and 100 nanometers in size. In nanotechnology, a particle is defined as a small object that behaves as a whole unit with respect to its transport and properties. Particles are further classified according to diameter. Nanoparticles can be used to target the herbal medicine to individual organ which enhance the selectivity, drug delivery, efficacy and protection. [1] Nanoparticles can be used to enhance the herbal drug solubility and help to localize the drug in a specific site thus resulting in better potency. Nanoparticles can transport high concentrations of drugs to disease sites because of their distinctive size and high loading capacities. [2]Herbal medicines have been generally used all over the world from ancient times and have been recognized by physicians and patients for their better therapeutic effect as they have less adverse effects as compared with modern medicines. Herbal Nano Medicines (HNMs) are nano-sized medicine containing herbal drugs as extracts. The herbal nanoparticles are colloidal system with herbal particles varying in size from 1 to 1000 nm. Ayurveda is one of the ancient medical sciences practiced in India. Herbal medicines have been recognized by physicians and patients due to their potential medicinal effect and also their fewer unwanted secondary effect as compared to other medicines, at the same time it also enhanced the bioavailability of the medicine. For a long time, herbal medicines were not considered for development of novel formulations due to lack of scientific confirmation as well as processing difficulties. The modern phyto-pharmaceutical research can solve the scientific needs of herbal medicines in developing novel drug delivery systems, such as nanoparticles, micro emulsion, matrix system, solid dispersion, liposomes and solid lipid nanoparticles. The difficulty of active constituents makes the development of novel drug delivery system for herbal formulations very challenging. In most of the standard dosage forms, only a limited quantity of administered dose reaches the targeted site, while the majority of the drugs get dispense throughout the body depending on physicochemical and biochemical properties resulting in low therapeutic value.

Role of nanoparticles

To transport the drug in the small particle size that increases the entire surface area of the drugs administering quicker dissolution in the blood Drug delivery system is targeted in a specific manner Suffusion of the drugs across epithelial and endothelial barriers to transport the drugs at sites of action. Combined therapy of the two dissimilar modalities or drugs. [3]

Properties of nanoparticles

- They are productively a bridge between bulk materials and atomic or molecular structures. [4]

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RESEARCH ARTICLE

Synthesis and Evaluation of some Novel Triazolo-thiadizoles Derivatives as Anti-diabetic Activity

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ABSTRACT:

Triazolo-thiodiazole and related fused heterocyclic compounds are of interest as potential bioactive molecules. Triazolo-thiodiazole derivatives have attracted the attention of organic chemists due to their biological and chemotherapeutic significance. Research in the field of anti-mycobacterium, anti-inflammatory and anti-microbial therapies is ongoing and studies are seeking. Therefore, the discovery of new effective anti-mycobacterium, anti-inflammatory and antimicrobial agents is imperative. The literature survey indicates that the fuse ring of triazolo-thiazazole derivatives has proven to be a good bioactive molecule. They showed various biological activities such as antibacterial, antifungal, anti-inflammatory, tubercular, anticancer, anticonvulsant, antioxidant, analgesic. In view of the above facts it was felt that some were interested in triazo- synthesis. All drugs were screened for their anti-diabetic activity with the standard drug Acarbose by an in vitro alpha-amylation method. The compounds C1 and C3 have been shown to have significant anti-diabetic activity.

KEYWORDS: Triazolo-thiodizole, Antibacterial, Anti-diabetic, Antitubercular, Anti-inflammatory.

INTRODUCTION:

There has been much effort in the design and development of the novel triazolo-thiodizole drugs from synthetic origin. Therefore, there is a growing interest in drug potential. Triazolo-thiodiazole compounds are of interest as potential bioactive molecules. Triazolo-thiodiazole derivatives have attracted the attention of organic chemists due to their biological and chemotherapeutic significance[1]. In many cases, the heterogeneous combination of the ring leads to extensive biological activity in the compounds. Some of the activities performed by asymmetric-tripolo-thiodiazole include antibacterial, anti-inflammatory, anti-diabetic and tubercular[2].

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Process Pharmacology is primarily concerned with the biological, analytical and biochemical aspects of the process, but the chemist must have productive interactions with those in other disciplines.The process of inventing new drugs is complex and involves the talents of people from different fields such as chemistry, biochemistry, molecology biology, physiology, pharmacy, pharmacology and pharmacology.Therefore, chemist holds a strategic position at the interface of chemistry and biology.[3-4]

METHOD:

Completes the practical work of the subject

1. Preparation of 2-amino-5-aryl-1, 3, 4-thiadizole (I).
2. Preparation of substituted 5-phenyl-N - [(1Z) - phenylmethylene] -1, 3, 4-thiadiazol-2 Amin (II).
3. Preparation of 2, 5 substituted Triazolo-thiadiazole (III).

1. Preparation of 2-amino-5-aryl-1, 3, 4-thiadizole(I)[5]

A mixture of thiosemicarbazide (0.1mole), aryl carboxylic acid (benzoic acid, 4-chloro benzoic acid) (0.1 mole), and hides. Sulfuric acid (10 drops) was

Research Square

Preprints are preliminary reports that have not undergone peer review.
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Metabolism of Arsenic in Human by AS3MT Gene

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Research Article

Keywords: Genetic Mutation, Arsenic Metabolism, AS3MT, MAsIII, DMAsIII

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Review On "Synthesis Of Pyrazine;Imidazolidine-2,4-Dione And Pyrimidines And Its Derivatives"

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ABSTRACT:
Pyrazine; Imidazolidine-2,4-dione and Pyrimidines are an example of aromatic heterocyclic organic compound. It is a monocyclic compound. They can be obtained naturally or it can be synthesized in laboratory. Pyrazine; Imidazolidine-2,4-dione and Pyrimidines and its derivatives play an important role in the medicinal chemistry and drug discovery with many pharmacological activities. Substitution of various chemicals on Pyrazine; Imidazolidine-2,4-dione and Pyrimidines nucleus gives important synthetic product and strategy in the drug discovery process. These derivatives contain versatile nitrogen containing heterocyclic compounds. These heterocylic compounds and its derivatives were used as building blocks for the important therapeutic compounds in medicine. Their nucleus plays a very important role as a therapeutic agent.They exhibit pharmacological activities such as antimicrobial, antiviral, anticancer, antiinflammatory, analgesic activity,anti-ulcer, anti-diabetic activity etc. Their nucleus gives active sites for the reaction like 2 and 5 position which gives potent therapeutic agents. The main aim of review is to help medicinal chemists for the development of SAR on Pyrazine; Imidazolidine-2,4-dione and Pyrimidines for each activity and to review the work reported, chemistry and pharmacological activities of Pyrazine; Imidazolidine-2,4-dione and Pyrimidines derivatives during past years. The major aim for this article is review on Pyrazine and Pyrimidines synthesis and the biological activity. Pyrazine as a heterocylic compound was commonly found in plants, animals, insects, marine organisms and microorganisms. Pyrazine, Pyrimidines anditsderivativeswere commonly used inindustriesmainly forflavorandpharmaceuticalapplications.

KEYWORDS: *Pyrazine; Pyrimidines; Biginelli reaction; HMDS; DMF*

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I. INTRODUCTION

The chemistry of heterocyclic compounds (N, S, and O containing compounds)is important for the discovery of some novel drugs. Amino acids, alkaloids, vitamins, hormones, hemoglobin, and many synthetic drugs and dyes contain heterocyclic ring systems[1-3]. There are large numbers of synthetic heterocyclic compounds like pyrimidines, Pyrrole, pyrrolidine, furan, thiophene, piperidine, pyridine, Imidazolidine, imidazole and thiazole and they gives significant biological activity. Among these Pyrimidines, Imidazolidine and Pyrazine are of great interest[4-6].The discovery of pyrimidines by the scientist Scheele; he isolated uric acid in 1776, fused pyrimidine chemistry started. Pyrimidine and Pyrazineare a six membered heterocyclic ring with two nitrogen (N) atoms in their ring. It is a colorless compound, having molecular formula of $C_4H_4N_2$ and molecular weight of 80 Dalton having melting point 22.5°C and boiling point 124°C[7-9]. Pyrimidine and Pyrazine is a weaker base than Pyridine. Only one of the nitrogen atoms of the Pyrimidine and Pyrazine can be alkylated by alkylating agents[10], but with tri ethyl oxoniumboro fluoride both nitrogen atoms can be alkylated. Pyrazine is commonly known as 1, 4- diazine. It has 6 membered heterocyclic compounds with two nitrogen atoms in *para* position. It having 6π- electron-deficient and resembles in planar configuration. Pyrimidine and Pyrazine bo

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Research Article

Formulation and *in-vitro* Evaluation of Topical Antimicrobial Preparation

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ABSTRACT

Due to the fact that medicinal plants are the most abundant source of the bioactive compounds utilised in both traditional and modern medicine, plant-derived compounds and herbal medicines have recently received significant interest due to their wide range of applications. The primary objectives of this study are to create an herbal ointment with antibacterial activity using *Adansonia digitata* and *Ocium sanctum* extracts. With the aid of A. digitata leaf extract and *Ocium sanctum* leaf extract, it is designed as an herbal ointment in this research study. Following formulation, the quality of the ointment was evaluated based on its irritancy, spreadability, consistency of the content, and stability. By employing the Agar cup plate method in an in vitro study, the antibacterial efficacy of herbal ointments containing extracts from *Adansonia digitata* and *Ocium sanctum* against bacteria like *Staphylococcus aureus* was determined. The findings of the zone of inhibition provided by the various extract ratios in ointment on *Staphylococcus aureus* were then compared to determine the most efficient combination. The goal of the current study is to formulate an herbal ointment and evaluate it utilising *Adansonia digitata* and *Ocium sanctum* extracts.

Keywords: *Adansonia digitata,* Herbal, *Ocium sanctum,* Ointment, *Staphylococcus aureus*, UV-Spectroscopy.

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INTRODUCTION

Herbal products are largely preferred to synthetic drugs due to their widespread availability as well as the vast empirical and accessible data regarding to their traditional use. However, modern scientific methods should be applied to validate the claims about the therapeutic effects of the plants, resulting in confirmation the traditional system of medicine.[1] Along with other dosage forms, herbal drugs are also formulated in the form of ointment. Medicated ointments contain a medicament dissolved, suspended or emulsified in the base.[2] *Adansonia digitata* is a native deciduous tree of African savannas belongs to Bombacaceae family, the bombax or kapok family. It is used in the treatment of bronchial asthma, dermatitis, sickle cell anemia, diuretic, anti-diabetic, diarrhoea, dysentery, laxative, hiccough in children, anti-oxidant, anti-inflammatory, antidote for poison, anti-trypanosome uses.[3]

Tulsi is an aromatic shrub in the basil family Lamiaceae (tribe ocimeae) that is thought to have originated in north central India and now grows native throughout the eastern world tropics.[4] The medicinal properties of tulsi have been studied in hundreds of scientific studies including *in vitro*, animal and human experiments. These studies reveal that Tulsi has a unique combination of actions that include: Antimicrobial (including antibacterial, antiviral, antifungal, antiprotozoal, antimalarial, anthelmintic), mosquito repellent, anti-diarrheal, anti-oxidant, anti-cataract, anti-inflammatory, chemo preventive, radioprotective, hepato-protective, neuro-protective, cardio-protective, anti-diabetic, anti-hypercholesterolemia, anti-hypertensive, anti-carcinogenic, analgesic, anti-pyretic, anti-allergic, immunomodulatory, central nervous system depressant, memory enhancement, anti-asthmatic, anti-tussive, diaphoretic, anti-thyroid, anti-fertility, anti-ulcer, anti-emetic, anti-spasmodic, anti-arthritic, adaptogenic, anti-stress, anti-cataract, anti-leukodermal and anti-coagulant activities.[5,6]

MATERIALS AND METHODS

Collection and authentication of Plant material

Leaves of *Adansonia digitata Linn*. (Family: Malvaceae) were collected from Medicinal Garden, Pravara Rural College of Pharmacy, Pravaranagar. The plant was authenticated by Department of Botany and Research centre, PVP College Loni with reference number PVPC/Bot/2021-22/121-1.

The ethanolic extracts of *Ocium sanctum* were collected from the Amsar Private Ltd., Indore, India.

Preparation of *A. digitata* leaves extract

The *Adansonia digitata* leaves were dried under shed and grinded into fine powder, using pestle and mortar. Then a 100g of the grinded powder was dissolved in 400 mL ethanol (70%), and incubated for 48 hours at room temperature. The extract ed using maceration Method, and the en boiled

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RESEARCH ARTICLE

Evaluation of adaptogenic activity of Neurotip capsules by swimming endurance and chronic stress model

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ABSTRACT:
Stress is the disturbed homeostatic condition of the organism, and it is represented by non-specific response of the body to any demand imposed on it. Stress brings various changes in physiological condition of the organism, but various mechanism of the body will counteract to maintain homeostasis. Neurotip capsule is effective Ayurvedic treatment for stress related disorders. Neurotip capsules have unique combination of herbs like Jatamansi, Guduchi, Shankapushpi, Ashwagandha, and Probiotics. These herbs are known to sooth the mind, promote calmness and act as a stress buster. In present research study Neurotip formulation was screened for acute toxicity study and sub chronic oral toxicity study on adult albino mice. Animals were observed for behavioural changes, neurological changes and autonomic profile changes. There was no noticeable toxicity and death observed in animals when treated with highest dose of 5000mg/ kg of the formulation. Neurotip was tested on swimming endurance of mice. The results were compared with standard group treated with Geriforte. Test formulation was evaluated by chronic stress model in rats using Omeprazole as standard drug. Assessment of ulcer induction was done to check adaptogenic potential of Neurotip. Ulcer protection by test formulation was found to be 68.44% showing good antistress effects.

KEYWORDS: Adaptogenic activity, Swimming endurance test, Chronic stress test, Neurotip capsules, Ulcer protection.

INTRODUCTION:

Management of Stress:

Stress is the disturbed homeostatic condition of the organism, and it is represented by non-specific response of the body to any demand imposed on it[1]. Stress brings various changes in physiological condition of the organism, but various mechanism of the body will counteract to maintain homeostasis. If organism suffer strong acute or chronic stress and body is unable to maintain homeostasis. Under this condition, various types of diseases and disorders will develop, and even it may lead to death, if it is not managed properly[2].

Various diseases and disorders caused by stress are hyperglycemia, elevated blood pressure, gastric ulcers, chronic stress induced depression and suppression of immunity[3].

Environmental stress brings down immunity of organism, which is indicated by rise of stress markers[4]. Hazardous stressful situation can be managed by using antistress agent or adaptogen. Various medicinal plants have shown antistress activity such as Ashwagandha, Ginseng, and Tulsi [5]. This prompted to carry research on evalution of adaptogenic and immunomodulating potential of neurotip in rodents.

Neurotip Capsules:

Neurotip capsules are an effective Ayurvedic treatment for stress related disorders. Neurotip capsules unique combination of herbs like Jatamansi, Gu Shankapushpi, Ashwagandha, and Probiotics.

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SYNTHESIS, MOLECULAR DOCKING OF THIAZOLIDINE-4-ONE DERIVATIVE AS A POTENTIAL ANTICANCER AGENTS

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Abstract: A series of 3-(2-Amino-5-benzoyl-phenyl)-2-substituted-thiazolidin-4-ones (DBT-1 to DBT-12) were synthesized in good yield and characterized by IR, 1H NMR spectroscopy. The molecular docking study of title compounds was performed using VLife MDS 4.4 on polo like kinase 1 to prioritize them for anticancer, Antioxidant testing. The title compounds were tested for their anticancer activity against MCF-7 human breast cancer cell line with the SRB assay. The compounds DBT-6 (GI50:30µM), DBT-8 (GI50:10µM), DBT-10 (GI50:30µM) showed good anticancer activity. Among the compounds tested with SRB assay, phenyl ring containing bromo nitro and hydroxyl group's substitution at the third and fourth position on 1, 3 thiazolidin-4-ones demonstrated the highest percentage growth inhibition against MCF-7 cell line. The antioxidant activity compounds DBT-8 (IC50:17.00 µg/ml), DBT-11 (IC50:8.42 µg/ml), DBT-9 (IC50:23.33 µg/ml) shows a good activity as compared to ascorbic acid. The study reveals that observed anticancer activity is may be due to inhibition of enzyme polo like kinase 1 in the cancer cells.
Keywords: Anticancer activity, Docking, Polo like kinase 1, Thiazolidine-4-one.

Introduction

Cancer is causes an uncontrolled growth of cells in which normal body cells transmits into cancerous cells. Polo-like kinase 1 (PLK1) is a preserved mitotic serine-threonine protein kinases [2]. PLK1 is the most scientifically studied member of the PLK family that interprets a significant role in cell cycle progression. This is required to regulate the various steps involved in the cell cycle progression [3]. PLK1 acts as a regulator in the cell division cycle and genomic stability [4]. It is considered as an attractive anti-cancer target because it is highly expressed in proliferating cells there by promoting tumorigenesis [5]. In contrast to PLK1; very less is known about other isoform of PLK. PLK2 is known to play important role in centriole duplication and during the G1/S transition [6]. PLK1 is expressed maximally during late G2 and M phases of the cell cycle and contributes to the regulation of centrosome maturation, bipolar spindle formation, and cytokinesis. Currently, more than 51 kinase inhibitors are approved for the effective management of various types of cancer [7]. In the current situation, some PLK1 inhibitors are undergoing preclinical and clinical trials in phase 1 and phase 2.

The literature survey reveals that native computational ligand 1, 3-thiazolidine-4-ones shows a diversity of biological response like anticancer [8], anti-inflammatory [9], antioxidant [10], antibacterial [11], antifungal [12], antidiabetic [13] and antihyperlipidemic [14] activity. The native ligand 1, 3-thiazolidine-4-ones used as an inhibition of polo like kinase 1 enzyme for the uncontrolled growth of cell division into the cancer [15].

In the present study, we propose a series of 1, 3 thiazolidine-4-ones synt[illegible]lucidation and

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SYNTHESIS AND MOLECULAR DOCKING STUDIES OF 1, 3-THIAZOLIDINE 4 ONES AS ANTICANCER AGENTS

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ABSTRACT
Cancer is a major cause of death all over the globe. Controlling cell division by inhibition of mitosis is the most successful clinical strategy for cancer treatment. The development of novel anticancer agents is the most important area in medicinal chemistry and drug discovery research. Thiazolidine is the multifunctional nucleus which shows a number of pharmacological activities like anticancer, anti-inflammatory, antioxidant, antibacterial, antifungal, antidiabetic, antihyperlipidemic and antiarthritic.
Methods: In a present study series of 3-[5-(2-Chloro-phenyl)-isoxazol-3-ylmethyl]-2-Substituted-thiazolidin-4-one (CMT-1 to CMT-12) were designed, synthesized by the microwave-assisted system, and characterized by melting point, IR, IR, ^{1}H NMR, and mass spectroscopy. All the newly synthesized compounds were examined for their *in vitro* anticancer activity against breast cancer cell line MCF-7 by Sulforhodamine B (SRB) assay, antioxidant activity by DPPHassay and angiogenesis activity by chorioallantoic membrane (CAM) of chick embryos assay.
Results: The compounds CMT-12 (GI_{50}: 28.5 µg/ml) and CMT-6 (GI_{50}: 50.7 µg/ml)& CMT-4 (GI_{50}: 53.1 µg/ml) exhibited significant cell growth inhibitory activity.
Conclusion: These results indicate that compound CMT-12 and CMT-6 as related polo-like kinase 1inhibitors compounds could be lead compounds for further development of anticancer agents. The antioxidant activity by DPPH radical scavenging assay the compounds CMT-7 (IC_{50}:11.96 µg/ml), CMT-9 (IC_{50}:10.67 µg/ml) and CMT-10 (IC_{50}:9.08 µg/ml)exhibited excellent radical scavenging activities comparedto ascorbic acid (IC_{50}:13.04 µg/ml). The compounds CMT-4, CMT-8 and CMT-10 at 10 nM test drug concentration and the CMT-6 compounds at 100 nM test drug concentration shows the maximum capillary growth inhibitory activity as compared with thalidomide as standard drug
Conclusion: These results indicate that compound CMT-6, CMT-8, CMT-10 and CMT-12 as related polo-like kinase 1inhibitors compounds could be lead compounds for further development of anticancer agents.

Key Words: Anticancer activity, Antioxidant activity, Angiogenesis activity**,** MCF-7 cell line, Molecular Modelling, Polo-like kinase 1 inhibitors, Synthesis, Thiazolidine-4-one

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REVIEW ARTICLE

Analytical Technique for Carvedilol and Ivabradine Determination from Pure and Pharmaceutical Dosage Forms: A Review

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ABSTRACT

Carvedilol and ivabradine is a drug combination used to treat cardiovascular diseases like hypertension, chronic stable angina pectoris and, chronic heart failure. Both are different in their mode of action. Carvedilol prevents exercise-induced tachycardia via inhibition of beta-adrenoreceptor carvedilol, which also acts on alpha-1 adrenergic receptors and reduces blood pressure. In case of a higher dose also shows antioxidant and calcium channel blocking activity. Ivabradine is a heart rate-reducing drug that works by blocking cardiac pacemaker currents (If) selectively and specifically. The major goal of this review paper is to emphasize the characteristics of carvedilol and ivabradine, such as their pharmacological profiles, mechanisms of action, pharmacokinetic and pharmacodynamic studies, and previously described analytical methodologies for carvedilol and ivabradine determination. Various methods such as UV spectroscopy High-performance liquid chromatography (HPLC), Reverse phase -High performance liquid chromatography (RP-HPLC), Ultra-performance liquid chromatography (UPLC), Mass Spectrometry (MS), High-performance thin layer chromatography (HPTLC). is the most accurate easy method for estimation.

Keywords: Analytical method, Carvedilol, Heart failure, HPLC.

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INTRODUCTION

Heart failure (HF) is a serious public health issue. It has a considerable clinical, social, and economic impact, owing to significant functional limits and decreased patient quality of life. Increased adrenergic tone, altered autonomic regulation of the cardiovascular system, activation of the renin-angiotensin-aldosterone system, and diminished peripheral blood flow are all pathophysiological pathways that cause HF. In patients with ischemic heart disease, studies have indicated that a combination of ivabradine plus beta-blocker such as carvedilol improves exercise tolerance more than beta-blockade alone. Ivabradine works by blocking the enzyme that causes the heart to beat faster. If channel enhances event-free survival in heart failure patients with and without a sufficient beta-blocker.[1] 1-(carbazol-4-yloxy-3-[2-(O-methoxy phenoxy) ethyl]amino] carvedilol -2-propranol is a novel drug that is used to treat hypertension and heart failure (CHF).[2] It completely blocks adrenergic stimulation of beta receptors within the myocardium (beta 1 receptors) and within bronchial and vascular smooth muscles (beta 2 receptors) and to a lesser extent alpha 1 receptors within the vascular smooth muscle. Carvedilol works to lower systolic and diastolic blood pressure by lowering total peripheral resistance. Cardiac function is generally preserved and heart rate is either unchanged or decreased slightly.[3] Ivabradine is a unique cardiac medicine that was approved by the Food and Drug Administration (FDA) in April 2015 to help people with stable, symptomatic chronic heart failure avoid hospitalization.[4] Ivabradine works by blocking the hyperpolarization-activated cyclic nucleotide-gated (HCN) channel, which is responsible for pacemaker generation through the If current in the SA node, therefore decreasing the diastolic contraction if the SA node is up to date. The If current channels do play a role in the creation of spontaneous activity in pacemaker cells, as well as mediating autonomic HR control.[5,6] Several countries, including the United Kingdom, Australia, Saudi Arabia, and the United States, have allowed its use. The medicine has received approval in 108 countries and is available in 93 others. The majority of these nations are members of the European Union. The medicine has been approved in 12 Middle Eastern nations, including Saudi Arabia. These nations have approved the 5 and 7.5 mg film-coated tablet dosages (twice a day).[7] In cli[illegible]/cardia,

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RESEARCH ARTICLE

Stability Indicating Method Development and Validation of Carvedilol and Ivabradine in Bulk and its Formulation by Reverse Phase High Performance Liquid Chromatography Method

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ABSTRACT

A simple, sensitive, precise, specific, rapid, accurate, and novel reverse phase high performance liquid chromatography (RP- HPLC) method for determining carvedilol (CAR) and ivabradine (IVA) in bulk and its formulation has been developed validated. RP-HPLC performed the chromatographic separation on column C18 (4.6 mm x 2.5 cm, 5 µm) using acetonitrile: buffer pH 2.0 (60:40) pH of this buffer was adjusted to 2.0 with ortho-phosphoric acid, as a mobile phase. The flow rate was fixed at 0.90 mL/min. UV detection was operated at 275 nm, and injected volume was 20 µL. The retention time was found to be 2.931 for ivabradine and 3.370 for carvedilol. The RSD for ivabradine and carvedilol's precision is within a limit of less than 2%, which indicates that the given method is highly precise.

Regarding the accuracy, the percentage recovery of the drug ivabradine is 99.48, and 98.19% for carvedilol, linearity of carvedilol and ivabradine ranged from 25–100 ppm and 20–80 ppm, respectively. The calibration curve shows good range and linearity. The correlation coefficient of carvedilol and ivabradine was 0.9987 and 0.9991, respectively. Limit of detection (LoD) and Limit of quantitation (LoQ) were found to be 3.79 ppm and 11.50 ppm for carvedilol and 2.47 ppm and 7.48 ppm for ivabradine, respectively. The acid, base, UV, and thermal stress studies presented the formation of a variety of degradation products; the given method showed good accuracy, linearity, precision, and robustness for analyzing the drug combination in bulk and its pharmaceutical formulations.

Keywords: Carvedilol, Ivabradine, Method development and validation, RP-HPLC, Stability study.

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INTRODUCTION

Carvedilol is an antihypertensive drug chemically; it is named 1-(9H-Carbazol-4-yloxy)-3-[[2-(2-methoxyphenoxy) ethyl] amino] propan-2-ol.[1-3] It is a third-generation non-selective beta blocker that competitively blocks beta 1, beta 2, and alpha 1 adrenoreceptor.[4,5] it is also used for the treatment of hypertension, CHF (congestive heart failure), and ischemic heart diseases (Figure 1).[2,5]

It is white or almost white solid powder at room temperature[6], and which is completely soluble in DMSO (Dimethyl sulfoxide), methanol, sparingly soluble in isopropanol and ethanol, and slightly soluble in ethyl ether; practically insoluble in water and dilute acidic solution.[3]

Ivabradine is a cardiac medication chemically it is named as 3-[[3-[(7S)-3,4-dimethoxy-7-bicyclo [4.2.0] octa-1,3,5-trienyl] methyl-methylamino] propyl]-7,8-dimethoxy-2,5-dihydro-1H-3-benzazepin-4-one (Figure 2).[7,8] it reduces heart rate and use in treating heart failure patients. Ivabradine is selectively inhibited, if (funny channel), located in a sinoatrial node which controls the diastolic depolarization.[9-11]

It is white-slightly yellow powder it is soluble in some organic solvent such as ethanol, Dimethyl sulfoxide (DMSO), dimethyl formamide.

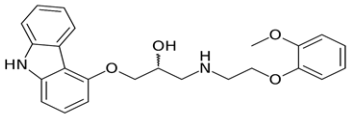

Figure 1: Structure of Carvedilol

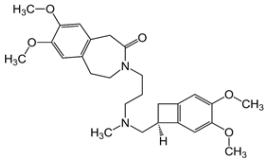

Figure 2: Structure of Ivabradine

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RP-HPLC Method Development and Validation for Determination of Metformin and Vildagliptin in Tablet Dosage Form

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ABSTRACT: Analytical method development involves screening various column and eluent conditions, method optimization includes iterative testing of various separation conditions of the HPLC method and is performed to achieve the best possible resolution, speed, and reproducibility, robustness testing and method validation.

This study aimed to develop fast, accurate, linear, sensitive and efficient high performance liquid chromatography [RP-HPLC] Methods for determining metformin and vildagliptin in pharmaceutical dosage forms. Chromatographic separation on a chromasil-C18 column [4.5 × 250 mm; 5 Î¼m] with a mobile phase consisting of methanol: 0.1% orthophosphoric acid (80:20) adjusted to pH 4 with orthophosphoric acid. The flow is 0.7ml/min, detection wavelength is 206nm. The peak retention times of the chromatographic conditions, metformin and vildagliptin were 1.87 min and 2.54 min, respectively. The method has been validated according to ICH Q2 R1 guidelines. Calibration curves for metformin and vildagliptin were found to be linear over the concentration ranges of 2-30µg/ml and 1-15µg/ml/ml. The detection and assay limits for Metformin and vildagliptin were established at 0.21 µg/ml/ml and 0.65 µg/ml, 0.09 µg/ml/ml and 65 µg/ml respectively. A new sensitive and simple method of reversed-phase high performance liquid chromatography [RP-HPLC] has been developed and validated for the determination of metformin and vildagliptin. This method can be used for routine dosing of vildagliptin and metformin.

Keywords: Metformin, Method validation, Reverse phase high performance liquid chromatography, vildagliptin.

INTRODUCTION

The chemical name of metformin (MTF) is [1-carbamimidamido-N,N-dimethylmethanimidamide] , is similar to oral ant diabetic biguanides. Used as a first-line drug in the treatment of non-insulin dependent diabetes. It improves glycemic control factors by reducing glucose production in the liver, reducing glucose uptake and increasing insulin-mediated glucose uptake. The therapeutic indication for metformin is second-line therapy in adults with type 2 diabetes, particularly overweight patients who fail to achieve adequate glycemic control at the maximum tolerated dose of oral metformin alone. The decrease in glucose and lipid concentrations is regulated by AMPK via activation of AMP-activated protein kinase (AMK) and the Peutz-Jeghers protein LKB1 (Inzucchi and Bergenstal 2012). Vildagliptin (VGT) [(S)-1-[N-(3-hydroxy-1-ada-mantyl) glycyl] pyrrolidine-2-carbonitrile], is a new type of oral antidiabetic belonging to the dipeptide Peptidase -4 (glucose-induced decreased secretion of glucagon-like peptide 1 and gastric inhibitory polypeptide)3 inhibitors are used as monotherapy in adults with type 2 diabetes, especially if insufficient controlled by patients' diet and exercise alone. Vildagliptin can be used as dual oral therapy in combination with metformin in patients with poor glycemic control despite metformin monotherapy at the maximum tolerated dose. Compared to sulfonylureas, vildagliptin has similar efficacy when combined with metformin and may reduce the risk of hypoglycemia without weight gain control and reduce hypoglycemia. Various methods have been developed to analyze the combination of vildagliptin and metformin and also sinle dosage form or with other combination by using HPLC and LCMS/MS methods (Abu Dayyih *et al.,* 2018; Mastan Ali and Ponnuri 2021; Jayaprakash and Senthil Kumar 2017; Patel and Patel2022; Attimarad *et al.,* 2022; Napate and Napate 2020).

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REVIEW ARTICLE

A Review on Polyherbal Formulation Used in the Treatment of Gastric Acidity

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ABSTRACT:
Acidity is a medical condition caused by an excess of acid production. This acid is produced by the stomach glands. Acidity causes symptoms such as stomach ulcers, gastric inflammation, heartburn, and dyspepsia. Acidity is a global issue caused by an imbalance between the acid-secreting mechanisms of the stomach and the proximal intestine. It causes a lot of problems in the lives of many people. An antacid reduces acidity and provides relief. This review article discusses different polyherbal formulations (PHF) used to treat gastric acidity. Due to its role in medicine and therapy, PHF has been used all over the world. The current study discusses a variety of commercial and non-commercial polyherbal formulations used worldwide to treat gastric acidity, as well as their therapeutic potential, clinical and preclinical outcomes, and safety and efficacy. This review will make it easier to learn everything about the previous scientific research as well as the crucial details about the antacid properties of polyherbal preparations, which will encourage young researchers to conduct additional studies in the future to protect people from gastric acidity. Natural herbs and their extracts are used in herbal treatment as an alternative to conventional medication to treat various conditions. It has been demonstrated that several medications contain medicinal components useful for treating ulcers or stomach acidity. The subject of the current work is the claim that a polyherbal formulation can be utilised as an alternative to currently available antacid formulations on the market. As a result, those plants that can reduce stomach acid are chosen, and a formulation is created.

KEYWORDS: Gastric acidity, Polyherbal formulation, Phytochemicals, Antacids, Synergistically.

INTRODUCTION:
Acid secretion in the stomach causes food breakdown during digestion. Excessive acid secretion in the stomach causes irritability, heartburn in the stomach lining, GIT disturbances, and discomfort. Stomach acid has a pH of 1-2. Long-chain amino acids can be broken down by digestive enzymes that are easily activated by stomach acid. The illness known as gastroesophageal reflux disorder is brought on by stomach acidity.[1]

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There is a movement of gastric acid from the stomach into the lower oesophagus in acidity, gastroesophageal reflux disease (Urdhva Gata Amalpitta in Ayurveda). It is made up of large quantities of hydrochloric acid, potassium chloride, and sodium chloride.[2]

The following are the most common acidity symptoms:
Regurgitation; Indigestion; Heartburn; Bad Breath; Indigestion; Constipation; Restlessness; Inflammation; Stomach Ulcers

An excessive amount of vomiting, a sour taste mouth, trouble swallowing, and a burning sensa the throat and stomach.[3]

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Section: Research Paper

Assessment of organoleptic and physicochemical properties of herbal shampoos: Formulation considerations of fermentation method

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Abstract

Hair is recognized as the most important organ in the mammalian body that affects self-defense, gender differentiation, extreme temperature protection, and attractiveness. Most of the time, hair loss is permanent and causes alopecia. Due to intense worry and strain, many people who are experiencing hair loss are looking for several therapies, including mythology, conventional and therapeutic healing, and the use of minoxidil and finasteride. Hair root activation is necessary to promote healthy hair growth and stop hair loss. The goal of the current research was to create a herbal hair shampoo for various uses using various plants (hair application). The necessary plant pieces were crushed, boiled, and sieved to create the extract. A variety of criteria, including physical appearance, viscosity, pH, homogeneity, eye sensitivity (the Draize eye test), hair growth activity, hair weight, stability test, and others, were used to evaluate the herbal hair shampoo formulation. These criteria are listed in this text. A prepared herbal hair shampoo with pseudoplastic behavior was discovered to be light brown in hue. The formulation's texture was lubricious and silky, and its pH was within acceptable bounds. After application with little sensitivity the first time, herbal hair shampoo showed excellent hair growth as well as hair weight and was confirmed to be stable for seven days. Recent studies have shown that herbal preparations may improve hair consistency.

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Status of Financial Inclusion in India

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Abstract:
One of the important parameter of economic development is access to finance by majority of population, hence, achievement of 100 per cent financial inclusion is an area of priority. The concept of financial inclusion is not new. India has been into this journey since the advent of cooperative movement in 1950s, followed by nationalization of banks in 1960s, Lead Bank Scheme, Priority Sector Lending, Self-Help Groups, Business Correspondent Models, etc. All these moves were with an intention to connect underserved and unbanked population of the country with the formal banking system. The biggest step in the financial inclusion journey of India was launch of Pradhan Mantri Jan DhanYojana (PMJDY) under which bank accounts of financially excluded population were opened with the help of digital channels and it has brought a major shift in the this field.
This research paper is an attempt to have a glimpse of status of financial inclusion in India and to study further road map of GoI and the RBI to achieve 100 per cent financial inclusion in the country.
Key words: financial inclusion, financial literacy, FINDEX, microfinance

Introduction:

One of the key ingredient for sustainable and inclusive growth of the country is 'Financial Inclusion'. Financial inclusion can be defined as universal access to a variety of financial services at an affordable cost. Financial services include banking services, insurance, equity and credit products of the banks.

Financial access is extremely important as it helps the families and businessmen to plan their long-term goals as well as prepare for contingencies. Once a person gains access to bank account, he is more likely to use other banking services too such as insurance and credit which helps them to start new business, avail the benefit of education and health insurance, risk management which in turn improves the overall quality of their lives.

Post pandemic the focus has been shifted from financial inclusion to digital financial inclusion. Digital financial inclusion is nothing but reaching financially excluded population through cost-saving digital means with a variety of financial services which are affordable and tailored as per their needs.

"Great Strides have been made towards financial inclusion and 1.2 billion adults worldwide have gotten access to an account between 2011 and 2017. As of 2017, 69 per cent of the world's adults had an account. Digital financial services have been launched in more than 80 countries."[1] Majority of financially excluded people have preferred mobile phones to gain access to formal financial services and have reduces dependence on cash based transactions. "However, close to one-third of adults – 1.7 billion – were still unbanked in 2017, according to the latest Findex data 2021.About half of unbanked people included women poor households in rural areas or out of the workforce."[2]

Coming down to India, the RBI mentioned that there has been an improvement of 24 per cent in financial inclusion was reported by FI-Index during the period of March 2017 and March 2021, which is a great achievement.

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Standardization of Herbal Ayurvedic Formulation

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ABSTRACT
Standardization in Ayurvedic formulation is distributed with the acceptance of standards for the quality and purity of raw materials, quality control at the flow of the drug manufacturing process, production of a good quality complete product, storage, and distribution to keep the quality of the end product. Numerous pharmaceutical companies be manufacturing and marketing different Ayurvedic formulations, developed as per the classical texts and the regulatory standards It is a main tool for establishing quality control methods for Ayurvedic drugs. Ayurveda is known for theutilization of poly-herbal formulations and multi-component therapeutics for the treatment of health and diseases.

Keywords: Ayurvedic, formulation, quality, herbal, drugs, medicine, manufacturing.

I. INTRODUCTION

Standardizationis major important to establish a system of standardization for every plant medicine in the market.Because the scope for variation in different batches of medicine is enormous. Ayurvedic care is not so highly effectiveStandardization is aprincipal factor forpolyherbal formulation in order to analyze the quality of the drugs and turn on the concentration of their active principle. The proper mode of action, pharmacology, pharmacokinetics, and pharmacovigilance of many important Ayurvedic drugs are still not fully explored.[1]In India, around 15,000 medicinal plants have been registered, which only used is7,000-7,500 plants for curing different diseases.In Ayurveda, single or multiple herbs (polyherbal) are used for the treatment. In Ayurveda, single or multiple herbs (polyherbal) work for the treatment.In India, around 15,000 medicinal plants have been registered, which the only used are 7,000-7,500 plants for curing different diseases.[2]

Herbs count crude plant material, such as leaves, flowers, fruit, seeds, stems, wood, bark, roots, rhizomes, or other plant parts, which may be entire, fragmented, or powdered.Herbal medicines containherbs, herbal materials, herbal preparations, and finished herbal products. In some countries, herbal medicinesmay include, by tradition, natural organic or inorganic active ingredients that are not of plant origin (e.g., animal and mineral materials).[3]In this article, an attempt has been made to bring to light the classical references related to standardization, the milestones in this ongoing pursuit have been exhibited, with the use of the latest scientific methods being incorporated for a standardized Ayurvedic drug.Asava-arista's medicinal characteristics of Ayurvedic classical dosage forms, liquid dosage forms based on self-generated alcohol with faster absorption, long shelf life, and increased market conformity have led to a continuous rise in demand. New fermentation methods and packaging innovations tend to have been embraced by many Ayurvedic processing units.It is arequired tool for establishing quality control methods for Ayurvedic drugs. Careful contemplation of the classical literature of Ayurveda was done, and thepresent guidelines of WHO on the standardization of herbal drugs, the latest research on the same via the internet were explored and examined in the purview of the newest standardization procedures.[4]In Ayurveda, standardization has been well-defined and documented in classical and contemporary texts. Still, these have been written with an individualistic intent and not for industrial or commercial purposes.[5] It can be concluded from the review that standardization in Ayurveda is an ongoing process where one needs to be strictly vigilant about the new scientific methods to study the fine chemical procedures and the intermediate compounds formed, but at the same time be aware

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AYURVEDIC PHARMACOLOGY AND THERAPEUTIC CLAIMS ON *TINOSPORA CORDIFOLIA*

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ABSTRACT

This review article aims to correlate Ayurvedic pharmacology and therapeutic claims for *Tinospora cordifolia* with the conformation generated using scientific research methodology. Diabetes, liver damage, free radical arbitrate injury, infections, stress and cancer on these the different researchers carried out their work. The use of indigenous drug industry in India has been largely expanded in recent years. *Tinospora cordifolia*__(Guduchi) belonging to family Menispermaceae has a wide arrangement of bioactive principles in exploring nutraceuticals from plant material**.**

KEYWORDS: Diabetes, liver damage, free radical arbitrate injury, infections, stress and cancer on these the different researchers carried out their work.

INTRODUCTION

It is a large, deciduous, extensively-spreading, climbing vine with some elongated twining branches. Leaves are simple, alternate, and they do not have stipules, with long petioles up to 15 cm (6 in) long which are round in appearance and pulvinate, both at the base and apex with the basal one longer and deviated partially and half way around. It gets its name heart-leaved moonseed by its heart-shaped leaves and its reddish fruit. Lamina are openly ovate or ovate cordate, 10–0 cm (4–8 in) long or 8–15 cm (3–6 in) broad, seven nerved and greatly cordate at base, membranous, pubescent above, whitish tomentose with a projecting reticulum beneath. Flowers are unisexual, small on separate plants and seeming when the plant is leafless, greenish-yellow on axillary and terminal racemes. Male flowers are clustered, but female flowers are generally solitary. It has six sepals in two series

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REVIEW ON PHARMACOGNOSTIC, PHYTOCHEMICAL & PHARMACOLOGICAL STUDY OF *VITEX NEGUNDO LINN.*

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ABSTRACT

Vitex negundo linn. is an aromatic herb belong to family verbenaceae. it is also known as nirgundi, five leaved chaste tree. it is found in moist area, often on banks of rivers, throughout india, up to an altitude of 1500 meters. this species is globally distributed in indo-malesia, cultivated in america, europe, asia and west indies. the plant has extensively used in treatment of a excessive amount of ailments as traditional medicine, folk medicine and pharmacological evidence. it is used to treat a plethora of ailments, ranging from headache to migraine, from skin affections to wounds, and swelling, asthmatic pains, male and female sexual and reproductive problems this plant have many chemical constituents as flavonoids, steroids, terpenoids, lignan, flavones, glycosides these chemical constituents are present in each part of the plant. vitex negundo extract have various pharmacological activities such as anti-inflammatory, antipyretic, anti-arthritic, antioxidant, analgesic activity, antibacterial activity, antitumor activity, anxiolytic activity, nephroprotective activity, anti-HIV activity, antitubercular activity, antieosinophilic activity, anti-snake venom activity.

KEYWORDS: phytoconstituents, Vitex negundo, terpenoids, Traditional medicine.

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INTRODUCTION

medicinal plants have been a major source of therapeutic agents since ancient times to cure human disease. now-a-days, there is abundant increase in medicinal plant based industries due to the increase in the interest of use of medicinal plants throughout the world which are growing at a rate of 7-15% annually. in spite of major advances in the modern medicine, the development of new drugs from natural products is still considered important. however, there

Phytochemical study and GC-MS analysis of *caralluma adscendens : A Review*

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Abstract

The main investigation carried out by different solvent extract (Ethanol, Methanol, pet. Ether and aqueous). After all extraction process methanolic extract show major secondary metabolite activity Alkaloid, Flavonoid, Terpenoid and GlycosideMedicinal plants have performed a very important role in medicine production. The plant extracts directly has demonstrated to be safe. In the present studies, examines the activity of Caralluma group

Keywords – N hexadecanoic acid, Caralluma adscendens, , FTIR, GCMS

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Systems and *in vitro* pharmacology profiling of diosgenin against breast cancer

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Aim: The purpose of this study was to establish a mode of action for diosgenin against breast cancer employing a range of system biology tools and to corroborate its results with experimental facts.

Methodology: The diosgenin-regulated domains implicated in breast cancer were enriched in the Kyoto Encyclopedia of Genes and Genomes database to establish diosgenin-protein(s)-pathway(s) associations. Later, molecular docking and the lead complexes were considered for molecular dynamics simulations, MMPBSA, principal component, and dynamics cross-correlation matrix analysis using GROMACS v2021. Furthermore, survival analysis was carried out for the diosgenin-regulated proteins that were anticipated to be involved in breast cancer. For gene expression analyses, the top three targets with the highest binding affinity for diosgenin and tumor expression were examined. Furthermore, the effect of diosgenin on cell proliferation, cytotoxicity, and the partial Warburg effect was tested to validate the computational findings using functional outputs of the lead targets.

Results: The protein-protein interaction had 57 edges, an average node degree of 5.43, and a *p*-value of 3.83e-14. Furthermore, enrichment analysis showed 36 KEGG pathways, 12 cellular components, 27 molecular functions, and 307 biological processes. In network analysis, three hub proteins were notably modulated: *IGF1R*, *MDM2*, and *SRC*, diosgenin with the highest binding affinity with *IGF1R* (binding energy −8.6 kcal/mol). Furthermore, during the 150 ns molecular dynamics (MD) projection run, diosgenin exhibited robust intermolecular interactions and had the least free binding energy with *IGF1R* (−35.143 kcal/mol) compared to *MDM2* (−34.619 kcal/mol), and *SRC* (-17.944 kcal/mol). Diosgenin exhibited the highest cytotoxicity against MCF7 cell lines (IC_{50} 12.05 ± 1.33) µg/ml. Furthermore, in H_2O_2-induced oxidative stress, the inhibitory constant (IC_{50} 7.68 ± 0.51) µg/ml of diosgenin was lowest in MCF7 cell lines. However, the reversal of the Warburg effect by diosgenin seemed to be maximum in non-cancer Vero cell lines (EC_{50}

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Rp HPLC Method Development for Pazopanib in mixture and tablet Form

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ABSTRACT: Analytical method development involves screening various column and eluent conditions, method optimization includes iterative testing of various separation conditions of the HPLC method and is performed to achieve the best possible resolution, speed, and reproducibility, robustness testing and method validation. Pazopanib is a class of drugs called kinase inhibitors with potent antineoplastic effects and is used in the treatment of kidney and soft tissue sarcomas. This work includes the development of a simple, accurate, precise and reproducible liquid chromatography (RP HPLC) method for the determination of pazopanib in tablet dosage. Isocratic elution was performed at a flow rate of 1.0 mL/min on a Kromasil C18 column (250 mm × 4.6 mm, 5 µm) at 25 °C. The mobile phase was methanol: 0.025% TFA in water (60:40) v/v. The UV detection wavelength is 273 nm and the injection volume is 20 µL. Pazopanib has a retention time of approximately 2.83 minutes. According to ICH guidelines, the process has been validated for various parameters such as suitability, efficiency, recovery and robustness. The validated RP HPLC method is specific, precise, and accurate, and has been successfully used to identify pazopanib and its commercial samples.

Keywords: HPLC, pazopanib, ICH guideline, method development, validation.

INTRODUCTION

Pazopanib is a second generation tyrosine kinase inhibitor (TKI) (Escudero-Ortiz *et al.,* 2015). It is 5-(pyrimidin-2yl) amino 2 methyl benzene sulfonamide substituted by (methyl) amino at position 4 (2, 3 dimethylindazole 6 yl) cancer, lung cancer and cancer blood prostate, pazopanib is a potent and selective multi target tyrosine kinase inhibitor that inhibits vascular endothelial growth factor receptor (VEGFR 1), VEGFR 2, VEGFR PDGFR α/β1 (Fierce, 2015; Sleijfer *et al.,* 2009; Tugues *et al.,* 2011). It also acts as a receptor for stem cell growth factors (stopping tumor growth and angiogenesis) (Saharinen *et al.,* 2011). A review of the literature showed that several methods such as Rp HPLC have been reported to produce a compound or a single dosage form of pazopanib (Buralla & Parthasarathy 2020; Sankar *et al.,* 2021) and UV spectroscopy (Chaitanya *et al.,* 2015). Therefore, this study aims to develop a simple, fast, sensitive, efficient and reliable HPLC method for the quantification of pazopanib in bulk and pharmaceutical form. The plan has been validated in accordance with ICH guidelines ICH Q2 (R1). Molecular formula and molecular weight of C21H23N7O2S and 437.52 g/mol.

MATERIALS AND METHODS

The LC system has the following components: Chromatography was performed on Kromasil C18 at 5 µm dimensions (250 mm × 4.6 mm diameter) using Spinchrom software. A Shimadzu electronic balance (AX 200) was used. Analytical pure pazopanib was received as a gift sample from Glenmark Ltd. (Mumbai, India). Methanol, water (E. Merck, Mumbai, India) was the HPLC grade. Tablets 200 mg of Pazoci were purchased from the local market.

Preparation of stock solutions: Pazopanib Standard stock solution was prepared by dissolving 10.83 mg Pazopanib hydrochloride (Equivalent to 10 mg of Pazopanib) into a 20 mL clean and dried volumetric flask, added about 15 mL of water to dissolve it completely and made volume up to the mark with water (500 PPM). Further diluted 2 ml of stock solution to 10 mL with mobile phase (100 PPM). It was prepared in mobile phase of each trial and injected in development trials.

Selection of analytical wavelength for HPLC method development: The analytical wavelength is chosen from the maximum absorption wavelength of the spectrophotometric analysis, which is 273 nm.

Sample preparation: Weigh 20 tablets of in a mortar and grind into a fine powder. Mix the contents thoroughly with wax paper. Measure powder equivalent to 100 mg of pazopanib and transfer to a clean and dry 100 mL volumetric flask. Add 70 mL of water and sonicate for 10 minutes with intermittent shaking. After 10 minutes, allow the solut om temperature and bring to the mar 13

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Analytical Methods Development And Validation For Estimation Of Rivastigmine Drug Used For Alzheimer's Disease: A Systematic Review

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Abstract - *Quality assurance and quality control of pharmaceutical formulations and bulk pharmaceuticals both heavily rely on pharmaceutical analysis. The demand for innovative analytical techniques has increased as a result of the pharmaceutical industries' rapid expansion and medication production across the globe. Development of analytical methods has therefore evolved into the core function of analysis. Alzheimer's disease (AD) is a neurodegenerative disorder characterized by progressive memory defeat and impairment in behaviour, language, and visuospatial skills. Rivastigmine is a carbamate-derived acetylcholine esterase inhibitor that is primarily used to treat mild to moderate Alzheimer's disease. The primary goal of this review was to highlight spectrophotometric, reverse phase high performance liquid chromatography (RP-HPLC), high-performance liquid chromatography (HPLC), high-performance thin layer chromatography (HPTLC), and liquid chromatography-mass spectroscopy (LC-MS) techniques that can be used for method development and validation for Rivastigmine drug . The review is a collection of information that includes the various analytical techniques used, the various columns used, the mobile phase used, flow rate, various detectors, and detection wavelength and retention time. The purpose of this review is to stimulate research into the creation of new, more accurate, precise, and specific methods for estimation of rivastigmine.*

***Key Words*: Alzheimer's disease, Rivastigmine, Dementia, Method development, Analytical techniques.**

1.INTRODUCTION

Alzheimer's disease (AD) is the most prevalent serious neurocognitive impairment in the world today, affecting up to 47 million individuals. It is the sixth most common cause of death in the US, accounting for 29.4 fatalities per 100,000 people, according to the most recent statistics from the Centers for Disease Control and Prevention (CDC). cardiovascular disease deaths have fallen by 14% between 2000 and 2014, whereas complications from AD have shot up by 89% during the same period. The stress that carers go through is equally significant, and it has an impact on their physical and emotional health. In low to middle income and high income nations, respectively, barely 5-10% and 40–50% of individuals have gotten a formal diagnosis of AD, in spite of its societal impact.[19]

It is believed that Dr. Alois Alzheimer, a German psychiatrist and neuropathologist, first described the dementing illness that subsequently came to be recognised as AD. [5] The financial cost of Alzheimer's disease (AD) is among the highest in the world. 50 million people worldwide were estimated to have Alzheimer's disease in 2019.[14]

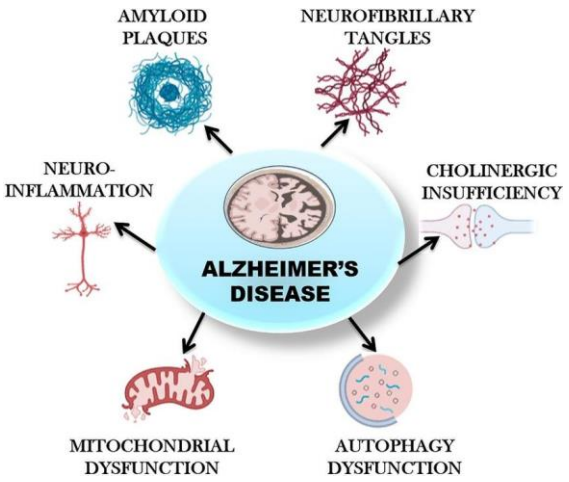

Fig 1.1

The hallmarks of Alzheimer's disease (AD), a neurodegenerative disorder, are neuritic plaques and neurofibrillary tangles in the medial temporal lobe and neocortical regions of the brain. Clinically, the disease shows up as a gradual decline in cognitive and behavioural abilities. Dementia, the most common form of the illness, already affects 50 million people globally, and by 2050, experts expect that number to increase to 152 million cases, doubling every five years.[4] Dementia is a clinical condition (a collection of relate oms) that is characterised by a steady d capacity.

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Research Article

THE LABORATORY WASTE MANAGEMENT IN PHARMACY FIELD

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ABTRACT

The management of pharmaceutical waste plays a significant role in pharmacy schools. Wastes are undesirable substances that can no longer be employed in manufacturing processes and may be eventually become substances that are harmful or not to humans or the environment. The management of hazardous wastes is a crucial component of pharmacy school. Pharmaceutical wastes come in a variety forms, primarily as organic waste or synthetic waste, testing waste, formulation waste, analytical waste, etc. It originates from a variety of departments within the colleges. The college manages these wastes with the aid of a waste management system. In this paper, we employ an alternative method for waste management.

Keywords: Waste products, pharmaceutical waste, Disposal methods.

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Computational and experimental pharmacology to decode the efficacy of *Theobroma cacao* L. against doxorubicin-induced organ toxicity in EAC-mediated solid tumor-induced mice

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Background and objective: Doxorubicin is extensively utilized chemotherapeutic drug, and it causes damage to the heart, liver, and kidneys through oxidative stress. *Theobroma cacao* L (cocoa) is reported to possess protective effects against several chemical-induced organ damages and also acts as an anticancer agent. The study aimed to determine whether the administration of cocoa bean extract reduces doxorubicin-induced organ damage in mice with Ehrlich ascites carcinoma (EAC) without compromising doxorubicin efficacy.

Methodology: Multiple *in vitro* methods such as cell proliferation, colony formation, chemo-sensitivity, and scratch assay were carried out on cancer as well as normal cell lines to document the effect of cocoa extract (COE) on cellular physiology, followed by *in vivo* mouse survival analysis, and the organ-protective effect of COE on DOX-treated animals with EAC-induced solid tumors was then investigated. *In silico* studies were conducted on cocoa compounds with lipoxygenase and xanthine oxidase to provide possible molecular explanations for the experimental observations.

Results: *In vitro* studies revealed potent selective cytotoxicity of COE on cancer cells compared to normal. Interestingly, COE enhanced DOX potency when used in combination. The *in vivo* results revealed reduction in EAC and DOX-induced toxicities in mice treated with COE, which also improved the mouse survival time; percentage of lifespan; antioxidant defense system; renal, hepatic, and cardiac function biomarkers; and also oxidative stress markers. COE reduced DOX-induced histopathological alterations. Through molecular docking and MD simulations, we observed chlorogenic acid and 8′8 methylenebiscatechin, present in cocoa, to have the highest binding affinity with lipoxygenase and

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Section A-Research paper
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In vivo studies of fraction isolated from chloroform extract of *Abelmoschus esculentus L* (Malvaceae) stem as potential antidiabetic agent in alloxan induced diabetic rats

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Abstract:

Background: *Abelmoschus esculentus L* (Malvaceae), commonly named Lady finger is one of the commonly used medicinal plants. Historically it is found that stem of *A. esculentus L* contain a variety of compounds that have been linked to diabetes mellitus. Okra stem contained the greatest concentration of phenolic and flavonoid compounds. Okra had a lot of fibre. **Objective:** The present study was carried out to investigate the traditional use of *Abelmoschus esculentus L* stem in alloxan monohydrate -induced diabetes in rats alongwith antidiabetic chemical constituents in stem and was tested for in vivo biological activities. **Methods**: The ethanolic, aqueous and chloroform extract was obtained by the Reflux extraction method, and fractionation was done with column chromatography and TLC. The antidiabetic chemical constituent has been confirmed by Gas Chromatography-Mass Spectroscopy (GC-HRMS) analysis. For in vivo activities, rats with diabetes mellitus caused by alloxan monohydrate were selected and the anti-diabetic indicators assessed were body weight, blood glucose level, insulin and urine volume. **Results:** Fraction of the Chloroform extract showed presence of Lysine, Leucine, Dodeanoic acid, Pentanoic acid in GC-HRMS Study**.** In GC-HRMS analysis determine Leucine is present in highest area of 2565054.20 with molecular weight 265. This Chemical constituent decreased blood glucose levels and has positive effects to cure diabetes. The extracts and fraction with oral dose were compared with standard drug metformin (150 mg/kg b. w). *A.esculentus* chloroform extract Fraction (AECEF) showed better effect than other extracts used for study. **Conclusion:** From the results we can conclude that *Abelmoschus esculentus L* plant, is having various antidiabetic compounds with effective activity.

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Original Article

DESIGN, DEVELOPMENT AND OPTIMIZATION OF MOUTH DISSOLVING TABLET OF AMBRISENTAN USING DESIGN EXPERT SOFTWARE

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ABSTRACT

Objective: The rationale of the current work is to design, develop and optimize of mouth dissolving tablet of ambrisentan to treat hypertension.

Methods: Sodium starch glycolate and crospovidone were used as the super disintegrants in the direct compression method to create nine ambrisentan mouth-dissolving tablet formulations. Wetting time, drug content, *in vitro* disintegration time, dispersion time, and dissolution time were all assessed for the produced formulations.

Results: Based on the results obtained, formulation F6 containing 30 mg of crospovidone exhibited good wetting time, dispersion time, disintegration time and drug release. The hardness of formulations AS1 to AS9 was found to be in the range of 2.5 to 3.11 Kg/cm^2. The friability of formulations AS1 to AS9 was found to be less than 1%. A water absorption ratio was performed for ensuring the moisture sorption and water uptake properties of super disintegrants. The *in vitro* drug release of formulation AS6 containing a concentration of Crospovidone 30 mg, shows 91.30% drug release respectively at the end of 12 min.

Conclusion: The mouth-dissolving tablets of ambrisentan were successfully designed, developed, and fabricated. It can be reasonably concluded that the AS6 batch of mouth-dissolving tablets of ambrisentan with 30 mg of crospovidone exhibited maximum cumulative drug release in 12 min.

Keywords: Superdisintegrants, Ambrisentan, Crospovidone, Optimization, Mouth dissolving tablet

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INTRODUCTION

Mouth-dissolving drug delivery systems (MDDDS) are a new class of formulations that combine the benefits of traditional tablet and liquid dosage forms while also providing additional benefits over both of the older dosage forms [1]. They allow both the ease of ingesting offered by a liquid formulation and the convenience of a tablet formulation [2]. Compared to the main alternative, oral liquids, MDDDS has the luxury of offering far more precise dosing [3]. This type of formulation is specifically made for patients who have dysphagia, are elderly, young, bedridden, traveling, or are psychotic and unable to swallow standard oral medications. For dysphagic, pediatric, and geriatric patients with swallowing issues, MDDDS are the most practical dosage forms since they dissolve/disintegrate quickly when placed in the mouth [4]. They are a fantastic choice for travelers and people who are bedridden because they do not require water for administration. Psychotic individuals cannot conceal them in the mouth since they simply disappear when put there. Due to the line extension of the current formulation, these medications not only improve patient compliance but also generate significant profits for the makers [1, 3].

A persistently raised blood artery pressure is a defining feature of hypertension, also known as high or rising blood pressure. Every part of the body receives blood via the veins from the heart. With each beat, the heart pumps blood into the vessels [5]. Blood pressure is produced as a result of the heart's pumping action on the walls of blood vessels (arteries). When the pressure is greater, the heart must use more effort to pump blood. Hypertension, a serious medical disease, can increase your risk of having heart, brain, kidney, and other issues. The disorder affects more than a billion people worldwide-roughly 1 in 4 men and 1 in 5 women-and is a substantial cause of premature death. The fact that low-and middle-income countries account for two-thirds of cases of hypertension is partially attributable to the increase in risk factors in those populations over the past few decades. The current work aims to design, develop, and fabricate a mouth-dissolving tablet of ambrisentan to treat hypertension [5].

MATERIALS AND METHODS

Materials

The active pharmaceutical ingredient Ambrisentan was procured from MSN laboratories, Hyderabad. The other excipients, such as magnesium stearate, purified talc, and mannitol, were procured from SD Fine Chemicals (Mumbai). Sodium starch glycolate and crospovidone sodium were purchased from Prerana Enterprises (Ahmednagar), and lactose was purchased from Research fine chem industries (Mumbai).

Methods

Experimental design

3^2 full factorial design was employed for optimization of polymer-plasticizer ratio. This design involved conducting experimental trials in all nine feasible combinations while evaluating each of the two components at three different levels. Crospovidone polymer amount (X1) and SSG plasticizer amount (X2) were considered independent variables, and each factor was examined at levels of-1, 0, and+1. Table 1 lists the independent variable levels that were used as well as the entire factorial design layout of the variables. In table 2, the various mouth-dissolving tablet compositions are listed [6].

Table 1: Independent variables design

Factor	The level used, actual (coded)		
Independent variables	**Low (-1)**	**Medium (0)**	**High (+1)**
X1 = Concentration of polymer (mg)	20	30	
X2 = Concentration of plasticizer (mg)	5	10	

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Formulation and Evaluation of Herbal Kajal for its Anti-Inflammatory, Anti-Microbial, Anti-Acne properties

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ABSTRACT:

Kajal is an ancient eye cosmetic, traditionally used in mascara. It is widely used in the Middle East, the Mediterranean, South Asia, and the Horn of Africa as eyeliner to contour and/or darken the eyelids. Some did this to "strengthen the child's eyes", and others believed it could prevent the child from being cursed by the evil eye. With consideration to all these facts, herbal Kajal was formulated and evaluated. Herbal Microwave assisted extracted Kajal (MAEK) and Traditional method extracted Kajal (TMEK) were formulated by using *Anethumgraveolans,* Yasthimadhu, *Ricinuscommunis, Ocimum sanctum*, Castor oil and almond oil but the methods of extraction of active constituents was different and evaluated on various parameters. In MAEK all the herbs were extracted by using Microwave assisted extraction method. Green chemistry and microwave assisted extraction was used to obtain high yield, short extraction time, reducing waste and promoting efficiency in extraction. In TMEK all the herbs were extracted by using traditional methods of extraction. The pH, viscosity values proved the significant evaluation. The base satisfied the evaluated parameter values and physical evaluation was suggestive of a cosmetically appealing product.Composition of nutrient agar I.P and cylinder plate method was employed; MAEK showed higher level of zone of inhibition in microbial contamination as compared with TMEK. MAEK was able to inhibit protein denaturation in a concentration-dependent manner as compared with TMEK. Inhibition % of protein denaturation of the formulations was within the range from 53.0% to 76.0% at the concentration range of 25–100 ug/ml. MAEK exhibited a significantly higher level of inhibition compared to TMEK showed the lowest inhibition levels. Herbal Kajal prepared by using Microwave assisted extraction method showed better evaluation parameters as compared with TMEK.

KEYWORDS: Kajal, Herb, MAEK, TMEK, Extract, Anti-microbial, Anti-inflammatory.

INTRODUCTION:

Kajal is worn for a variety of reasons including tradition, beautification, to ward off the "evil eye," the widespread belief that kajal is medically beneficial for the eyes. Kajal is reported for improvement of vision, strengthening and keeping the eyes healthier. One of the most striking properties of kohl has been observed effect of UV rays emerging fromthe sun and dust of the desert[1]. Firstly, blushes in Arabia were made of antimony trisulfide and the ore stibnite wascalled 'ethmid'.

As this was scarce and expensive, it was slowly replaced over the years by galena (lead sulfide) which has the same grey-black color and shiny appearance like stibnite[2]. Leadintoxicationfollowing operation of camouflage performing from galena "camouflage- gravestone" has been a majorarea of review. On the contrary there are studies which are of a view thatlead is not absorbed through trans corneal route and thusshould not be linked or blame for increased blood

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REVIEW ARTICLE

inventi Spreading Knowledge

Sotagliflozin: A Pharmacological Action for Chronic Kidney, Diabetes and Heart Failure Disease

Rushikesh Daud[1*], S D Mankar[1]

Abstract: A new dual Sodium-glucoSe cotranSporter 1 and 2 (SGLT1/2) inhibitor called Sotagliflozin haS Showed promiSe in the treatment of chronic kidney, diabeteS and heart diSeaSe. DiabeteS mellituS (DM) iS a condition that iS cloSely related to chronic kidney diSeaSe (CKD) and DM iS alSo a major riSk factor for the onSet and progreSSion of CKD. The benefitS of Sotagliflozin for Type 1 diabeteS may alSo outweigh the riSk of diabetic ketoacidoSiS aS a whole. In the current analySiS, the riSk of cardiovaScular diSeaSe and renal failure in people with Type one diabeteS iS eStimated. It iS now being determined how Sotagliflozin affectS cardiovaScular outcomeS through itS clinical trialS. In addition to lowering blood Sugar, Sotagliflozin alSo reduced the riSk of cardiovaScular eventS with certain pharmacological and pharmacokinetic way. ReSent clinical Study SupportS the data where Sotagliflozin affectS cardiovaScular eventS in patientS with type two diabeteS who had worSening heart failure conditionS. ThiS extenSive Study focuSeS on the pharmacological aSpectS of Sotagliflozin on glycaemic management, renal outcomeS, cardiovaScular outcomeS and adverSe eventS in order to aSSeSS the Sotagliflozin mode of action and pharmacological Study.

INTRODUCTION

The Sodium/glucoSe cotranSporter family SLC5, which iS one of the largeSt familieS of cotranSporterS, includeS SGLTS. [1] In patientS with Stable heart failure, Sodium-glucoSe cotranSporter 2 (SGLT2) inhibitorS lower the likelihood of hoSpitaliSation for heart failure or death from cardiovaScular cauSeS. However, it iS unknown if SGLT2 inhibitorS are Safe and effective if uSed Soon after a decompenSated heart failure epiSode. [2] The benefitS of Sotagliflozin were moStly driven by the decreaSe in (firSt and SubSequent) hoSpitaliSationS and urgent viSitS for HF, whereaS the effect on CV fatalitieS remained ambiguouS due to the trial'S early end and inSufficient power. [3] In multiple clinical StudieS involving patientS with and without type 2 diabeteS (T2DM), Sodium-glucoSe cotranSporter 2 (SGLT2) inhibitorS conSiStently demonStrated poSitive effectS on the heart, kidney and blood preSSure. [4] Sotagliflozin, a Sodium-glucoSe cotranSporter-1 and Sodium-glucoSe cotranSporter-2 inhibitor, decreaSed the overall incidence of cardiovaScular deathS, hoSpitaliSationS for heart failure and urgent viSitS for heart failure relative to placebo by 33% in the SOLOIST-WHF (Effect of Sotagliflozin on CardiovaScular EventS in PatientS with Type 2 DiabeteS PoSt WorSening Heart Failure) trial. [5] Sodium-glucoSe cotranSporter 2 inhibitorS (SGLT2i) lower cardiovaScular riSk and Slow the progreSSion of diabetic kidney damage in perSonS with type 2 diabeteS. [6] The firSt pharmaceutical claSS that haS been Shown in extenSive clinical StudieS in HFpEF to lower hoSpitaliSation and cardiovaScular mortality iS Sodium-glucoSe co-tranSporter 2 inhibitorS (SGLT2i). In addition, independent of ejection fraction, the dual SGLT 1/2 inhibitor Sotagliflozin haS demonStrated a reduction in cardiovaScular eventS in diabetic HF patientS. Sotagliflozin preventS the onSet of heart failure in patientS with diabeteS and chronic renal diSeaSe and Sotagliflozin on CardiovaScular EventS in PatientS with Type 2 DiabeteS PoSt-WorSening Heart Failure (SOLOIST-WHF) Trial. (SCORED) trial: Sotagliflozin on CardiovaScular and Renal EventS in PatientS with Type 2 DiabeteS and Moderate Renal Impairment Who Are at CardiovaScular RiSk. [7] A brand-new claSS of Sodium-glucoSe co-tranSporter 2 (SGLT2) inhibitorS includeS Sotagliflozin, an oral anti-diabetic medication. The major tranSporter for glucoSe abSorption in the gaStrointeStinal tract, SGLT1 and the kidney-expreSSed SGLT2, which limitS glucoSe reabSorption in the proximal tubuleS, are both targetS of thiS anti-diabetic drug'S unique dual-receptor binding affinity. [8]

CHEMISTRY

((2S,3R,4R,5S,6R)] Sotagliflozin-2-(4-chloro-3-(4-ethoxybenzyl) phenyl)-6- (methylthio) tetrahydro-2H-pyran-3,4,5-triol] having a molecular weight of 424.94 g/mol and the empirical formula C21H25ClO5S [39,40]. It iS a cryStalline Solid that iS very Sparingly Soluble in aqueouS bufferS (about 1 mg/ml) and Sparingly Soluble in organic SolventS (30 mg/ml). [9] ItS chemical compoSition iS (2S,3R,4R,5S,6R).-2-[4-chloro3-[(4-ethoxyphenyl) methyl] phenyl6-methylSulfanyloxane-3,4,5-triol, Figure 1 depictS the Structure.

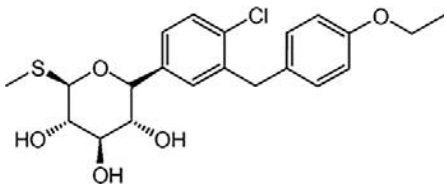

Figure 1: The chemical Structure of Sotagliflozin: (2S,3R,4R,5S,6R)-2-[4-chloro-3-[(4-ethoxyphenyl)methyl] phenyl]-6-methylSulfanyloxane-3,4,5-triol [10]

PHARMACOLOGY

Sotagliflozin haS Shown good efficacy in enhancing glycemic control in both formS of diabeteS typeS I and II, along with additional advantageS of decreaSed weight, glycaemic variability, SyStolic blood preSSure, faSting plaSma glucoSe, poSt-meal glucoSe and recorded hypoglycaemic occurrenceS. By lowering the doSe of inSulin, theSe improvementS were attained. Diabetic ketoacidoSiS, vaginal mycotic infection and diarrhoea are f the Side effectS aSSociated with Sotagliflozin

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RP-HPLC Method Development and Validation for Determination of Lisinopril and Amlodipine in Tablet Dosage form

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ABSTRACT: Analytical method development involves screening various column and eluent conditions, method optimization includes iterative testing of various separation conditions of the HPLC method and is performed to achieve the best possible resolution, speed, and reproducibility, robustness testing and method validation.
Objective: The present study was aimed to develop a rapid, accurate, linear, and sensitive and validate high performance liquid chromatographic [RP-HPLC] method for determination of lisinopril and amlodipine in pharmaceutical dosage form. Methods: The chromatographic separation was performed on kromasil-C18 column [4.5 x 250 mm; 5 µm] using a mobile phase consisting of Methanol: 0.1% OPA in water (70:30 v/v). The flow rate is 1.0 ml/min and the detection was carried out at 210nm.
Results: The chromatographic condition, the peak retention time of lisinopril and amlodipine were found to be 1.82 min and 2.68 min respectively. The method was validated as per ICH Q2 R1 guidelines. The calibration curve was found to be linear in the concentration range of 2-30 µg/ml for lisinopril and amlodipin. The limit of detection and quantification was found to be 0.219µg/ml and 0.665µg/ml for lisinopril and 0.228µg/ml and 0.691µg/ml for amlodipine respectively.
Conclusion: A new sensitive, simple reverse-phase high-performance liquid chromatography [RP-HPLC] method has been developed and validated for the determination of amlodipine and lisinopril. The proposed method can be used for routine determination of amlodipine and lisinopril.

Keywords: Lisinopril, Amlodipine, Method validation, RP-HPLC.

INTRODUCTION

Amlodipine (AMD) is chemically a 2-[(2-Aminoethoxy) methyl]-4-(2-chlorophenyl)-1,4-dihydro-6-methyl-3,5-pyridine dicarboxylic acid- 3-ethyl 5-methyl ester and it belongs to the class of calcium channel blocker (Budawari, 1996; Sweetman, 1999). Several spectroscopic (Nejres *et al.*, 2023; Gidwani and Patel 2017) RP-HPLC (Bistra & Peikova1 2013; More & Pawar 2021; Andhale & Kharat 2019; Gowri Sankar & Manju Latha 2014; Bhaskara & Rao 2011). HPTLC (Ramyasree *et al.*, 2018), LC-MS/MS 8 and LC-MS 9 have been reported for the estimation of amlodipine individually and in combination with other drugs. Lisinopril (LSNP), (S)-1-[*N*2-(1-Carboxy-3-phenylpropyl) - L-lysyl]-L-proline dihydrate is an angiotens in converting enzyme inhibitor that is used in the treatment of hypertension and heart failure. It is used alone or in combination with other medications to treat high blood pressure in adults and children 6 years of age and older. It is used in combination with other medications to treat heart failure. Lisinopril is also used to improve survival after a heart attack. A successful attempt is made to estimate the two drugs simultaneously. Therefore, it was thought worthwhile to develop an accurate and rapid RP-HPLC method for simultaneous estimation of AMD and LSN from tablet formulations.

MATERIALS AND METHODS

The liquid chromatographic system consisted of the following components: Chromatographic analysis was performed using Spinchrom software on a Kromasil C18 with dimension (250 mm × 4.6 mm i.d.) 5µm. The Shimadzu electronic balance (AX 200) was used for weighing purpose. Analytically pure Lisinopril and Amlodipine were obtained as gift samples from Trumac Healthcare Ltd., (Mumbai, India) Panchkula Hariyana. Acetonitrile, methanol, water (E. Merck, Mumbai, India) were of HPLC grade, while ortho-phosphoric acid (S.D. Fine Chemicals, Mumbai, India) was of Analytical grade used for the preparation of mobile phase. Tablet formulation *Amlocure* L containing labeled amount 5 mg Lisinopril and 5 mg Amlodipine were procured from local market.

Preparation of stock solutions: Weigh accurately 13.87mg Amlodipine besylate (Equivalent to 10 mg of Amlodipine) and 10.90mg Lisinopril dihydrate (Equivalent to 10mg of Lisinopril) transferred into 20 ml volumetric flask, added15 ml of methanol and sonicated to dissolve the standard completely and

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GUIDELINES AND ETHICAL REQUIREMENTS OF EXPERIMENTAL ANIMALS.

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Abstract:

Animal welfare issues and the ethics surrounding this practice are receiving more attention as more animals are used in research projects. Two key purposes of information dissemination regarding existing ethical issues and alternatives in animal experiments are to increase researcher awareness of potential methods of using animals in the experiment and to ensure that potential users are aware of the established alternatives. For illustration, legislation adopted in many nations during the 1980s mandates that laboratory animal applications be minimized, improved, and replaced whenever possible in accordance with the 3Rs. As a result, scientists from all over the world tried to incorporate the 3Rs into their biomedical research regarding the welfare of the lab animals. But since their revelations, the Qur'an, the Muslim religion's holy book, and Hadiths have included the laws governing how to care for and treat animals. Islam holds that humans should care for animals' welfare and living conditions because they are seen as a representation of Allah's intelligence and power. According to a number of Islamic manuscripts, humans are in charge of providing the bare necessities for animals' well-being and they have their own place in the creation hierarchy. In an effort to promote the provision of thorough ethical regulations in animal experiments, which their establishment could be advantageous for animal ethics committees or research institutes, this paper has attempted to review ethical consideration in animal experiments and regarding resources in this case.

Keywords: *Animals, Ethics, Research, Welfare, experiments, laboratory etc.…*

Introduction:

These guidelines have been prepared by the National Committee for Research Ethics in Science and Technology (NENT They ultimately serve as a set of moral principles for scientists and other individuals who are thinking about performing animal studies. The principles will be helpful when designing initiatives, evaluating them, and evaluating and disseminating findings and outcomes. [1]They are also aimed at encouraging awareness on research ethics and the use of animals in study, both within the research community and in the general public. The use of animals for study purposes and other ethical concerns are also intended to be acknowledged by the research community as well as the general population. [2]Animals used in research are subjected to an extensive spectrum of ethical assessments. [3] In order to make advances for people, animals, or the environment, it is generally acknowledged that using laboratory animals may be necessary in some instances. The widespread understanding is that animals have a moral authority and that how we treat them should be governed by ethical standards. These positions represent such standpoints: [4]

(i) Animals are sentient species with the ability to feel pain, so their interests must be considered when making decisions.

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Albizia odoratissima: Review on Morphology, Therapeutic uses, Phytochemical study and Pharmacological activities

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ABSTRACT:

A member of the Fabaceae family and the black siris of the Mimosaceae subfamily, *Albizia odoratissima* Benth (L.F.) is regarded as one of the top nitrogen-fixing trees and is widely cultivated in China, India, Bangladesh, Bhutan, Nepal, Myanmar, Thailand, Sri Lanka, and Vietnam. Several diseases and conditions have been treated using *Albizia odoratissima* Benth (L.F.) It has been used in many diseases and several activities including antidiabetic activity. Among All the species of Albizia, *Albizia odoratissima* has good antidiabetic activity. Traditionally the different parts of plants have to cure treatments for Diabetes, Asthma, Leprosy, Bronchitis, Cough, Skin Diseases and Inflammatory pathologies such as burns, ulcers etc. Different prepared extracts of these plants and their parts have been reported for various pharmacological activities like Antidiabetic, Antioxidant, Antimicrobial, Anti-inflammatory, etc. The goal of the present review study is to provide a Pharmacognostical description, Pharmacological Activities, Therapeutic importance, and uses.

KEYWORDS: *Albizia odoratissima* (L.F) Benth, Pharmacognosticalprofile, Pharmacological Activities, Preliminary Phytochemical study, Traditional Use.

INTRODUCTION:

A member of the Fabaceae family is *Albizia Odoratissima* Benth (L.F). It is a deciduous tree that develops swiftly and has a diameter of 120–150cm. It can reach heights of 15–25m. In India, Nepal, Bhutan, Bangladesh, Myanmar, Laos, Thailand, China, Sri Lanka, and Vietnam, it is a common plant. The heartwood of *Albizia odoratissima* is dark brown to black, dense, and often striped. It seasons with few problems, works and polishes well, and is used in structural timber, furniture and agricultural implements[1 2]. All part of the plant shows activities such as anxiety, and depression. The flower head has oxytocic, digestive, sedative, insomnia, anthelmintic, and diuretic.

The stem part has analgesics, stimulants, swelling, injuries, abscesses, diuretics, and anthelmintics and is mostly used for diabetes[3]. Trees of *Albizia odoratissima* are a major source of fuel which are produced by the dead and defective branches from shade trees. The tree produces an insoluble gum that has been combined with other gums and is used as an extender. The Leaves of *Albizia odoratissima* are excellent cattle fodder and monkeys eat the pods.[3] The dense root system of the tree reduces soil erosion, and it was planted to conserve soil. Pharmacognostic and preliminary phytochemical studies have not been reported for the Leaf part of this plant.[4]

Plant Profile:

***Albizia odoratissima*:**

The name of the plant: *Albizia odoratissima* Benth (L.F)

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Unlocking the Hidden Potential of Lantana Camara: A Comprehensive Review of Its Medicinal Uses

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Abstract:

Lantana Camara, commonly known as the West Indian Lantana, is an ornamental shrub that is native to the American tropics. The plant has been used extensively in traditional medicine systems around the world for its various medicinal properties. In this comprehensive review, I will be discussing the traditional uses of Lantana Camara in medicine, its chemical composition, pharmacological properties, and its potential as a therapeutic agent.

Introduction to Lantana Camara: Lantana camara is a perennial flowering plant that belongs to the family Verbenaceae. It is native to tropical regions of the Americas, but has been introduced to other parts of the world, including Africa, Asia, and Australia.

The plant is known for its vibrant and colorful flowers, which are arranged in clusters and can range in color from pink, yellow, orange, and red to white. The leaves of Lantana camara are also distinctive, with a rough texture and a strong odor when crushed.

Lantana camara has been used in traditional medicine for a variety of ailments, including respiratory infections, fever, and skin diseases. However, the plant can also be toxic to humans and animals if ingested, and can cause skin irritation in some individuals.

Despite its potential risks, Lantana camara has also been studied for its potential medicinal properties, particularly its antibacterial and insecticidal activities. The plant's essential oils, in particular, have show ıatural alternative to synthetic insecticides.

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Traditional uses of Lantana Camara in medicine

Lantana Camara has been used for centuries in traditional medicine systems arou has been used to treat a variety of ailments, including coughs, colds, and respiratory infections. In South America, it

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A REVIEW ON PHARMACOGNOSTIC, PHYTOCHEMICAL STUDY AND FORMULATION OF HERBAL TABLET AILANTHUS EXCELS FROM EVALUATION OF ANALGESIC ACTIVITY

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ABSTRACT

over the past decades, The tree has several medicine as the fodder for goats, and one of the tree used for (SPM). Over the past herbal medicine became global importance, and medicine increase economical wealth Widespread use of herbs throughout the globe has raised serious concerns over their quality, safety and efficacy. Thus, accurate scientific assessment has become a prerequisite for acceptance of herbal health claims. *ailanthus excels* majorly found In central and south India, belongs to family Simaroubaceae most of Ayurveda therapy used in these plant and Indian tribal The tribal population uses the plant for antifertility, anthelmintic and rejuvenating purpose. Alkaloid, flavonoid, terpenoids reported in this plant ayurvedic formulation Dasmularista. In the present review an attempt has been made to explore different aspects of Ailanthus excelsa.

INTRODUCTION

During last year demand increase in herbal medicament. as many European and north American countries increase demand on herbal product who are dependent on medicinal plants to meet the primary health care needs. Although, modern medicines are available, herbal medicines have often retained popularity for historical and cultural reasons. There is a need for screening their traditional claims because in this scientific era and everyone wants scientific support and proofs before using the traditional medicines for the desired therapeutic effect. an attempt has been made to compile the scientific survey until the date of Ailanthus excelsa Roxb which is widely used in Indian traditional system of medicine for

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RESEARCH ARTICLE

Analytical Method Validation for Simultaneous Estimation of Domperidone and Omeprazole by RP-HPLC Method

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ABSTRACT

The developed RP-HPLC technique lets in speedy and particular omeprazole and domperidone determinations, the goal of the current painting is to improve and extend the chromatographic circumstances, to broaden RP-HPLC method. a variety of mobility phases were tested for the duration of technique improvement, some of the numerous cell phases methanol, acetonitrile and phosphate buffer changed into discovered to be a perfect cell phase, because it provided optimal peak forms and high resolution. The go with the flow rate changed into optimized at 0.90 mL/min. The development of the isocratic elution method for omeprazole and domperidone made it perfect for quick and routine analysis. Omeprazole and domperidone linearity and correlation coefficient had been located to be 10 to 50 ug/mL 0.997, and 0.998, respectively. The restriction of detection for omeprazole and domperidone turned into discovered to be 1.78 and 3.15 and the limit of quantification changed into observed to be 544 and 956. With the assay procedure, the methodology has been recognized as accurate. The %assay become determined to be 98 and 73. The evolved technique changed into confirmed to an excellent accuracy and precision. The isocratic elution approach evolved for the dedication of omeprazole and domperidone perfectly suited for rapid and ordinary evaluation. This technique shows that right reproducibility of the effects. moreover this approach become easy, touchy, and accurate. Degradation studies had been accomplished, right here the drug stability outcomes have been within the variety of acceptance standards 85 to 115%. Moreover, this approach was easy, touchy, and correct.

Keywords: Domperidone, Method validation, Omeprazole, Optimization, RP-HPLC.

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INTRODUCTION

Domperidone (molecular weight- 425.9) increases gut bowel movements by lowering esophageal sphincter tone.[1-4] By allowing the movement of acid contents deeper inside the colon and avoiding reflux esophagitis, this increased gastrointestinal motility helps reduce vomiting and nausea.[5-7]

It is an official compound of B. P. omeprazole. The substance is utilised as a proton pump inhibitor in pharmaceutical formulations to treat gastric ulcers.[8-12]

There had been several courses describing various techniques for quantifying such substances in my opinion or in mixture with other tablets. The components of omeprazole have been successfully measured through excessive overall performance liquid chromatography with coulometric detection.[13-18]

HPLC is used for evaluation of omeprazole in bioanalytical sample like human plasma. (RP)-ion couple domperidone and cinnarazine were successfully separated using the HPLC method in pharmaceutical formulations.[19-21]

The prevailing paper describes the improvement of RP-HPLC method the use of isocratic cell section that offers sure blessings as a result of its efficiency and speed.

Drug samples of omeprazole and domperidone have been procured from Swapnaroop drugs Pvt. Ltd. Aurangabad.

MATERIALS AND METHODS

Instruments

Shimadzu HPLC with UV detector is used.

Software Used

Lab Solutions

Reagents Used

HPLC Grade methanol was used as the solvent as well as the Mobile phase. It was procured fr[illegible]. From

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EVALUATION OF NEUROPROTECTIVE EFFECT OF POLYHERBAL FORMULATION AS MEMORY ENHANCER AGAINST SCOPOLAMINE INDUCED AMNESIA IN RATS

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Abstract

The present study was designed to evaluate the nootropic activity of Polyherbal formulation (PHF) using T- maze and morris water mazeon scopalamine induced amnesia in rats.Ayurvedic Polyherbal formulation (PHF) consists of plant ingredients of Brahmi (*Bacopa monniera*), Shatavari(*Asparagusracemosus*), Ashwagandha (*Withaniasomnifera*) and Vacha (*Acorus calamus)*. Nootropic activity in rats with the treatment of PHF (200 and 400 mg/kg, p. o.) and piracetam (200 mg/kg, i.p.) were administered for 14 successive days to separate groups of rat. Effect of PHF on learning and memory of rat was investigate using Morris water maze and T maze against scopalamine (1mg/kg i.p.) induced amnesia. We studied the influence of PHF on central cholinergic activity via estimating the whole brain acetyl cholinesterase enzyme through Ellman's method. In the Morris water maze model, PHF shows significant decrease in escape latency (EL) as compared with normal control and memory-impaired rat. The T-maze model results also showed that dose of PHF significantly improved learning and memory in rats. Poly Herbal formulation and Piracetam also notably reduced brain AChE concentration in rat brain. Furthermore, this dose significantly reversed the amnesia induced byscopalamine. Our data suggested that, PHF may be an effective formulation for learning and memory process against Scopalamine induced memory impairment.

Keywords: Nootropic activity, Polyherbal formulation, Scopolamine-induced amnesia, learning and memory, acetylcholinesterase enzymecv

Introduction

Memory function is at risk to a variety of pathological condition in that involves many neuropsychiatric and neurodegenerative diseases like Alzheimer's disease[1]. Alzheimer's disease (AD) is an age-related disease is characterized by a range of anatomical and functional changes in the brain. It is the common form of dementia and affects more than 6% of people older than 65 years [2]. AD is a world prevalence of more than 46 million people[3]. A reduction in brain cholinergic neurotransmission (Ach) and an increase in oxidative stress producing dementia in AD patients[4]. Scopalamine is the drug impair learning and memory in rodents and human beings[5,6]. Memory loss, amnesia, dementia, anxiety, schizophrenia, and AD may be produced due to certain conditions like age, stress, and emotion[7,8]. Administration of cholinergic muscarinic antagonist such as atropine and scopolamine (SCP) induces learning impairment in a large variety of behavioral tasks[9,10]. In contrast, treatments which enhance cholinergic transmission improve memory [11].

There are a few nootropic medicines used in the treatment of AD, called nootropic drugs, belonging to the class of psychotropic agents[12]. Piracetam and cholinesterase inhibitors are nootropic drugs used to improve learning and memory abilities, mood and behavior associated with AD[13] However, these drugs pose some adverse effects and bioavailability issues[14]. To overcome these problems, researchers are seeking herbal formulations that can overcome the adverse effects of synthetic drugs.

Ayurveda as an ancient system of medicine of India has gaining importance worldwide due to its disease preventive and health promoting approach. In the present study, an Ayurvedic Polyherbal formulation was prepared by incorporating four traditional herbs i.e*Bacopamonnieri Linn., WithaneaSomniferra Linn Asparagus racemosus Linn and Acorus calamus Linn*

The abovementioned herbs were selected due to their uses as folk medicine in cognition enhancing and memory boosting effects. *Bacopa monnieri* Linn (Brahmi) is belong to family Plantaginaceae. It

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A CASE REPORT ON MATERIOVIGILANCE OF HEARING AIDS

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ABSTRACT

This article is centered on the significance of materiovigilance in hearing aids, which involves monitoring and reporting adverse events linked to medical devices. The piece highlights the potential risks that are associated with hearing aids, including irritation, infection, and allergic reactions, and emphasizes the importance of effective materiovigilance in ensuring patient safety. The review comprises an extensive evaluation of current materiovigilance systems for hearing aids, including the regulatory framework and reporting mechanisms. It also discusses the difficulties and restrictions of materiovigilance, such as the lack of standardization and underreporting. Additionally, the article presents a case study of a patient who experienced severe irritation and inflammation due to a hearing aid device. This case study underscores the urgency of timely identification and reporting of adverse events to prevent further harm to patients. Overall, this review emphasizes the essential role of materiovigilance in guaranteeing the safety and efficacy of hearing aids. It advocates for increased awareness and collaboration among healthcare providers, manufacturers, and regulatory authorities to strengthen materiovigilance systems and enhance patient.

KEYWORDS: Materiovigilance, Hearing aid, Medical devices, Case study.

INTRODUCTION

Materiovigilance is a system that combines performance characterization, monitoring, identification, data collection, reporting, and analysis of any undesirable event brought on by medical devices. Materiovigilance deals with post marketing surveillance of medical equipment including *in vitro* diagnostics.[1]

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RP-HPLC Method Development and Validation for Estimation of Dolutegravir Sodium in Bulk Drug and Tablet Dosage Form

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ABSTRACT

Several spectrophotometric and HPLC methods have been reported for determination of Dolutegravir sodium in bulk drugs and in pharmaceutical dosage forms. Hence, in the present study, a new, sensitive, reproducible, suitable and robust reversed-phase high performance liquid chromatography method was developed and validated for the determination of Dolutegravir sodium in bulk drug and in tablet formulation. In RP-HPLC method, Acetonitrile and 0.1 % OPA (70:30 % v/v) was used as mobile phase, at a flow rate of 1.0 ml/min, on HPLC system containing UV- detector with Open lab EZ chrome software and Column Kromasil C18 having dimensions 250 mm X 4.6 mm, 5 µm. The detection was carried out at 258 nm. The method gave suitable retention time that is 3.03 min for Dolutegravir . The results of analysis in the method were validated in terms of Filter study, Solution stability, specificity, Linearity, accuracy, precision (Repeatability and intermediate precision), limit of detection, limit of quantification and robustness. A simple and precise method was developed for the assay of Dolutegravir sodium in bulk drug and in tablet formulation. The method need regular reagents for doing analysis and also less time consuming, it can be performed routinely in industry for routine analysis of bulk drug and marketed product of Dolutegravir.

Keywords: Acetonitrile, Dolutegravir sodium, RP-HPLC, Validation.

INTRODUCTION

Now a days the various analytical methods was reported for the estimation of the dolutrgravir sodium in bulk drug and tablt dosage form. The present work was carried out for the a new, simle , precise, accurate and reproducible method development and the developed method was validated according to the ICH Q2R1 guidelines .

The drug Dolutegravir chemically known as sodium(3S,7R)-13-{[(2,4-difluorophenyl)methyl]carbamoyl}-7-methyl-9,12-dioxo-4-oxa-1,8-diazatricyclo[8.4.0.0^{3,8}]tetradeca-10,13-dien-11-olate, having molecular formula is $C_{20}H_{19}F_2N_3NaO_5$.1 The molecular weight of dolutegravir sodium is 441.36 . It is antiretroviral drug and is used to treat HIV/AIDS.[2-4]It inhibits HIV integrase enzyme by binding to the active site and blocking the strand transfer step of retroviral DNA intergration in the host cell.[5]The strand transfer step is essential in the HIV replication cycle and results in the inhibition of viral activity.[6]

The structure of Dolutegravir dug is shown in figure no.1.[7] Literature survey revealed that fewmethods were available for development and validation of dolutegravir sodium alone or in combination.[4-13]

The objective of the present study is to develop and validate a Reverse Phase High Performance Liquid Chromatographic method for the determination of Dolutegravir sodium in pharmaceutical dosage form which requires less time and minimum solvent consumption and the method reproducibility.

Several methods are available for the validation but veriablity in laboratory to ... o that the present work shown that the reproducibility of the results.

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Development and validation of RP-HPLC method for simultaneous estimation of Ertugliflozin and Sitagliptin in bulk drug and tablet dosage form

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Keywords:
Ertugliflozin, RP-HPLC, Sitagliptin, Tablet

Abstract: To treat type 2 diabetes, in a combined tablet dosage form the ertugliflozin and sitagliptin were administered. Considering the less complication and readily availability of HPLC, the main objective of present study was to develop a new, precise, accurate, linear, robust, and economical RP-HPLC method for the simultaneous estimation of ertugliflozin and sitagliptin in tablet dosage form. Effective chromatographic separation of Ertugliflozin and Sitagliptin was achieved on Kromasil C18 (5 µm 250 mm X 4.6 mm) and the mobile phase containing Methanol and 0.1% OPA in water isocratic elution mode at a flow rate of 1.0mL/min. with column temperature at 30 °C and the injection volume was 20 µL at column temperature at 30°C. At an isosbestic wavelength of 212 nm, ertugliflozin and sitagliptin were found to have retention times of 5.30 min. and 2.05 min., respectively. The method was proven to be precise (%RSD 2%), accurate (>90%), and specific for the simultaneous measurement of both drugs in tablets. As a result, the suggested method with excellent specificity, accuracy, precision, linearity and robustness as well as economical was useful for the regular quality control analysis of ertugliflozin and sitagliptin tablets.

Introduction

Ertugliflozin, chemically known as (1S,2S,3S,4R,5S)-5-[4-chloro-3-[(4-ethoxyphenyl) methyl] phenyl]-1-(hydroxymethyl)-6, 8-dioxabicyclo (3,2,1) octane-2,3,4-triol; (2S)-5-oxopyrrolidine-2-carboxylic acid, is a selective inhibitor of sodium-dependent glucose cotransporters (SGLT), more specifically type 2 diabetes (Fediuk et al., 2020). A new dipeptidyl peptidase-4 (DPP-4) inhibitor drug with the chemical name (R)-3-Amino-1-(3-(Trifluoromethyl)-5,6-Dihydro- (1,2,4) Triazolo (4,3-A) Pyrazin-7(8h)-yl)-4-(2,4,5-Trifluorophenyl) Butan-1-One is sitagliptin. Sitagliptin is an inhibitor of the protease dipeptidyl peptidase-4 (DPP-4), which breaks down the incretin GLP-1. GLP-1 levels that are elevated or sustained can enhance the pancreas's ability to secrete insulin by blocking DPP-4. Sitagliptin reduces hepatic glucose overproduction while increasing insulin production. In order to address decreased insulin levels brought on by beta-cell malfunction and the liver's unchecked synthesis of glucose, sitagliptin only functions when blood sugar levels are raised (Davis et al., 2010). To treat type 2 diabetes, ertugliflozin and sitagliptin were administered in a combined dosage form. There have been a few reported validated analytical techniques for estimating ertugliflozin and sitagliptin by RP-HPLC method (China et al., 2019; Rajeswari et al., 2022; Venkateswara et al., 2018; Raju et al., 2021; Vilas et al., 2022). It was found that no economically validated method was available from the literature for simultaneous estimation of Ertugliflozin and sitagliptin in bulk and tablet dosage form. The goal of the present research is to develop and validate the economical RP-HPLC method for simultaneous estimation of ertugliflozin and sitagliptin in bulk drugs and tablet dosage forms.

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Solubility enhancement and evaluation of Cilnidipine using solid Dispersion techniques

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Keywords:
Cilnidipine, dissolution rate, Solid dispersion, Solubility

Abstract: The poor solubility of Cilnidipine leads to low bioavailability and limits its therapeutic efficacy. To develop a dosage form that is stable, effective and has a higher bioavailability. It is necessary to increase the solubility of such medications. The present study aimed to improve the solubility by solid dispersion technique of Cilnidipine by solid dispersion techniques. Solvent evaporation and melt fusion methods were used to prepare solid dispersions of the drug cilnidipine with various polymers. The solubility of these prepared solid dispersions was evaluated by FT-IR spectroscopy, Differential Scanning Colorimetry and X-ray diffraction. The greatest solubility, of 21.07 µg/mL, was found in the solid dispersion that was developed by solvent evaporation technique employing a combination of Cilnidipine and Poloxamer 188 in a 1:9 ratio. The current investigation showed that solid dispersion using Poloxamer 188 can be a potentially effective method to increase the solubility and rate of dissolution of cilnidipine.

Introduction

The most significant challenge in pharmaceutical preparations is the poor water solubility of hydrophobic medicines. To get the optimal drug concentration in systemic circulation and the best bioavailability to produce the intended pharmacological response, their solubility is a rate-limiting stage in the absorption process (Hasanain, 2016). The solubility of such medications can be increased by creating a formulation that promotes quicker drug dissolution than the crystalline form. (Shah, 2007; Mankar, 2021). Various techniques, including chemical and physical alterations, crystal engineering, particle size reduction, salt generation, complexation, the addition of solvent or surface-active agents, solid dispersion, and others, can be used to make drugs more soluble. The characteristics of the drug, the site of absorption, and the criteria for the dose form all influence the choice of a solubility-enhancing method (Sareen, 2012; Savjani, 2012).

Solid dispersion is the combination of two different solid products, such as a hydrophilic matrix and a hydrophobic drug. The drug may be dispersed as crystalline or amorphous particles that are molecular in nature. When exposed to aqueous solutions, water-insoluble drugs dissolve more quickly and are more bioavailable because the carrier dissolves and the drug is liberated as extremely small colloidal particles. Because of the significant reduction in particle size and increase in surface area, oral absorption and dissolving rates are accelerated. Furthermore, throughout the process of dissolving a medication, no energy is required to alter its crystal structure. The presence of nearby hydrophilic carriers may boost the drug's solubility and wettability (Kalia, 2011).

The most common sign of chronic hypertension is a blood pressure value of 120/80 mmHg or higher. It is the most significant component that may be connected to and serves as an early warning system for numerous bodily disorders. Calcium channel blockers are the most commonly used antihypertensive drugs. Cinidipine is a calcium antagonist of the dihydropyridine fourth generation. L-type and N-type calcium channels may be inhibited by it (Mohana, 2022). Cilnidipine belongs to BCS Class I lity and high permeability

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A Review on Analytical Methods for Estimation of Pazopanib Drug, Biological Fluid and Tablet Dosage Form

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ABSTRACT

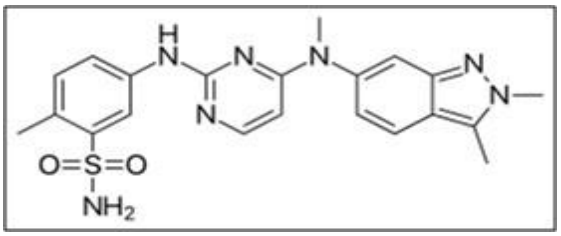
Patients with renal cell carcinoma and soft tissue sarcoma could be treated with pazopanib, according to FDA approval. Antiangiogenic and antitumor effects are exhibit by pazopanib. Analytical techniques are essential for estimating Pazopanib in different dosage forms. Consequently, a review of the Pazopanib analytical techniques is done. Here, we discussed the most recent analytical techniques for estimating apremilast in biological samples, pharmaceutical dosage forms, and bulk. In that, we investigate techniques like UPLC, HPLC, UV-Visible spectroscopy, and the commonly employed hyphenated method, LC-MS. These reported chromatographic methods for the quantification of Pazopanib, however, have a number of shortcomings, including the need for sample preparation, a lack of sensitivity, a complicated mobile phase mixture, and stringent monitoring of important method parameters, such as the mobile phase, flow rate, column temperature, flow gradient, and pH maintenance. This review will be helpful for the researcher who is working on Pazopanib.

Keywords: Antitumour, HPLC, LC-MS, Pazopanib.

INTRODUCTION

Pazopanib is chemically described as 5-({4-[(2, 3-dimethyl-2H-indazol-6-yl) (methyl) amino] pyrimidin-2-yl} amino)-2- methylbenzene-1-sulfonamide. Patients with renal cell carcinoma (RCC) and soft tissue sarcoma may be treated with pazopanib, according to FDA approval. The main way that pazopanib is effective to treat RCC is by inhibiting the intracellular tyrosine kinase of the platelet-derived growth factor receptor as well as vascular endothelial growth factor receptor. Pazopanib inhibits multiple types of receptors tyrokinases, which causes it to have antiangiogenic and antitumor effects.[1] A TKI means multitargeted tyrosine kinase inhibitor with oral activity, pazopanib (GW-786034, Votrient®) targets the VEGFR-1, -2, and -3, PDGFR-1, PDGFR-1, and c-Kit. It is effective by obstructing ATP's ability to bind to the intracellular tyrosine kinase domain of growth factor receptors, which prevents the receptors from autophosphorylating and prevents downstream signal transduction. It is authorised for use as a treatment for metastatic RCC and advanced soft tissue sarcomas in patients who have received chemotherapy by a number of regulatory agencies around the world, including the FDA, EMA, MHRA, and TGA. Additionally, it has been shown to be effective in treating non-small cell lung cancer and ovarian cancer.[2–6]

DRUG PROFILE:[7], [8]



STRUCTURE

Category: Anti- Cancer Agents

Chemical Name of Pazopanib: 5-[[4-[(2,3-dimethylindazol-6-yl)-meth n-2- yl] amino]-2-methylbenzenesulfonamide.

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PHYTOCHEMICAL STUDIES AND ANTIUROLITHIATIC ACTIVITY OF *VITEX NEGUNDO* LINN ROOT EXTRACTS

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ABSTRACT

Background: Vitex negundo has many uses in Ayurveda, Homeopathy, and Allopathy to treat several diseases like venereal diseases, Urinary problems, cough and fever, asthmatic pain, female reproductive problems. **Purpose:** This study aimed to perform the comparative phytochemical study, chromatographic profiling, and Antiurolithiatic activity of Vitex negundo linn root extracts. **Methods:** Using maceration extraction, Successive reflux condensation extraction processes were used to prepare petroleum ether, methanol, aqueous, and alcoholic extracts. Preliminary phytochemical study were carried out in plant parts extract. We performed chromatographic profiling of Vitex negundo by using GC-MS. About 18 phytochemicals in Vitex negundo plant root were identified and quantified by using GC-MS. Antiurolithiatic activity was performed to study urolithiasis inhibition potency of root extracts of the selected plant. **Results:** The percentage yield of petroleum ether, methanolic and aqueous extract of Vitex negundo Linn was found to be 1.42 % w/w,0.85%w/w and 1.14% w/w respectively. The Rf value of 0.76, 0.69,0.95,0.61,0.69,0.87 and 0.95 may be due to the presence of flavonoids, alkaloids, tannin, Glycosides The urine samples of normal and treated animals were collected on 14th and 28th day and a comparative analysis has revealed that there was significant increase in the volume & pH of urine in the animals treated with methanolic extract. This study proves that there was significant decrease in calcium oxalate crystals by methanolic root extracts against ethylene glycol induce urolithiasis model in swiss albino rats. It is interesting to note from the GC MS results that the presence of biomolecules such as Dibutyl malate, Heptaethylene glycol monododecyl ether, Suc-L-Phe-OH4-Nitrophenyl, Ajmalicine, alpha-Tocotrienol, Tyroscherin, Caryoptin, Bruceantin, Unii-0E0K1H745W, 4-O-MePdd, Bevirimat, Beta-Carotene, Phytoene, Allochenodeoxycholic acid, Calamin, 3 (Benzylnonanoylaminomethyl) androsterone, Methyl betulinate,Stearoyldelicone etc. correspond well with the reported medicinal roles of Vitex negundo Linn. **Conclusion:** As per present study, The selected plant part of Vitex negundo Linn could be helpful for generating formulations for kidney stone reduction.

KEYWORDS: Urolithiasis, Vitex, root, phytochemical, Medicinal plants.

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Preliminary Pharmacognostic and Phytochemical Study on *Corn Silk* and *Sour Orange.*

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Abstract

Aim: *To evaluate Pharmacognostic features including macroscopic, microscopic and physicochemical parameters of the corn silk and sour orange juice.*

Methods: *Corn silk and sour orange were studied macroscopically and microscopically. Preliminary phytochemical investigation of plant material was done.*

Result: *The colour, shape, size, odor, and surface features had been observed from hair of corn silk and peel and juice of sour orange by using electron microscope, Microscope images of cross selection of corn silk and sour oranges existence of cork cells, presence of oil globules, vertical lines, lower epidermis, oil glands, epidermal cells, globular chromoplast, crystalline chromoplast, pictures taken by iPhone camera. Phytochemical testing revealed the existence of flavonoids, alkaloids, tannins, phenols, steroids, acid compounds, glycosides, amino acids, and proteins. Physicochemical parameters including moisture content, ash value, extractive value and fluorescent behavior of corn silk extract and sour orange juice had been identified.*

Conclusion*: The present studies useful in a strive to supplement the data with consider to its identity standardization, and performing additional exploration on Ayurveda approach to medicine.*

Keyword: *Urolithiasis, Ethylene Glycol, Calcium Oxalate, Corn, sour orange*

1. **Introduction:**

Corn silk tea prepared by boiling corn silk in water is applicable for bladder problems. (1) Drinking Corn silk tea increases the manufacture of urine and helps in the easy removal of kidney stones due to its diuretic activity. This is also helping for managing diabetes and blood pressure-related problems. Diabetic patients are advised to consult a physician before taking Corn silk tea as its potency cause too much overcast of blood sugar due to its blood sugar-lowering property. Its ability also causes allergies like skin rash and irritation among hypersensitive particular, (2) Corn, also known as Maize, is one of the most popular cereal grains in the world. It contains various nutrients and phytochemicals (such as carotenoids and phytosterols) that play a very important role in managing various diseases. Corn flour is also very beneficial for health as it contains important B vitamins, iron, potassium, magnesium and other nutrients. Apart from Corn, Corn silk (which are long strands attached to an ear of corn) is also used for medicinal purposes. (3) Citrus aurantium (Rutaceae), the unripe fruit of bitter orange is used in traditional medicine to treat urolithiasis. (4) Previous studies have shown that Citrus aurantium have numerous bioactive compounds, including Polyethoxylated flavones (PMFs), flavonoid glycosides, alkaloids these active components demonstrate pharmacological activity; antioxidant, antimicrobial effect. (5) Citrus fruits, including oranges, grapefruits, and lemons, and the juices produced from these fruits, are central components of [illegible] enjoy growing popularity with recent health trends. The consumption of these juices might influ[illegible]of kidney stones

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Original Article

Simultaneous Estimation of Lamivudine, Tenofovir Disoproxil Fumarate and Efavirenz in Bulk and Tablet Dosage Form by Cramer's Rule

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ABSTRACT

Background: Cramer's rule is one of the significant techniques applied to settle an arrangement of conditions. In this rule, the upsides of the factors in the framework are to be determined utilizing the determinants of networks. Consequently, Cramer's rule is otherwise called the determinant rule. Few analytical methods for simultaneous estimation of Lamivudine, Tenofovir disoproxil fumarate and Efavirenz available currently are UPLC, RP-HPLC which are quit affordable. UV-Visible method is also available but that are not based on Cramer's rule which affords more accurate results in analytical research protocols. Traditional method needs to separate the LAM, TDF and EVZ before analysis. Proposed method did not need to separate these 3 drugs and only needs to prepare the sample solution directly as per given in the assay procedure and measure the absorbance at 262 nm, 247nm and 272 nm. **Materials and Methods:** Jasco V- 730 double beam UV- vis-spectrophotometer at wavelength range of 200-400 nm was used for research protocol. Trioday tablet containing three Anti-HIV drugs and manufactured by Cipla were used for the study. Methanol and freshly prepared distilled water was used as solvents. UV-visible spectroscopy method is applied for simultaneous estimation of Lamivudine, Tenofovir disoproxil fumarate and Efavirenz in their ternary mixture and their tablet dosage form. UV-vis-spectrophotometry is based on the additivity of absorbance of drugs. The drugs show maximum absorbance at 247 nm for Efavirenz, 262 nm for Tenofovir and 272 for Lamivudine in methanol so these wavelengths were selected for further analysis. Matrix was drawn using the standard absorptivity values obtained at all the three wavelengths and the amount of drug in the tablet dosage form was calculated by solving matrix using Cramer's rule. The developed method was validated as per ICH guidelines. **Results:** The maximum wavelength found to be linear in the range of 5-30 µg/mL for Lamivudine and Tenofovir disoproxil fumarate while 10-60 µg/mL for Efavirenz. The precision was carried out at two level viz intra-day and inter-day for which the RSD was found within limit (<%2). Recovery study was carried out on the developed method and the recovery was found to be in the range of 97.5 – 102.5%. **Conclusion:** From analytical data it can be concluded that all the three drugs obey the Beers-Lambert's law at these selected wavelengths of maximum. Method was found to be simple, sensitive, precise and accurate. The developed method can be applied for the routine analysis of the Lamivudine, Tenofovir disoproxil fumarate and Efavirenz in combined dosage form using Cramer's rule.

Keywords: Lamivudine, Tenofovir disoproxil fumarate, Efavirenz, Cramer's rule.

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INTRODUCTION

Tablet containing Lamivudine (LAM), Efavirenz (EFZ), Tenofovir Disoproxil Fumarate (TDF), is prescribed combination used to stop or slow down the progression of HIV infection; also

Formulation and Evaluation of Diclofenac Sodium Fast-Dissolving Tablet by Using Natural Super disintegrant

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ABSTRACT

The emergence of the fast-dissolving drug delivery system stemmed from the desire to offer patients a more convenient method for taking medication. Many individuals find it challenging to swallow tablets and hard gelatin capsules. The primary aim of this research was to develop a consistent formulation for fast-dissolving tablets of Diclofenac sodium, a therapeutic molecule already in use. The objective was to improve its effectiveness while avoiding side effects such as gastric irritation. Various batches of tablets were formulated using the direct compression method, incorporating different concentrations of natural super disintegrants Ocimum sanctum seed powder. The study examined the impact of altering the natural super disintegrant and its concentration on the formulation. The optimized batches were compared to determine the most effective super disintegrants for the Diclofenac sodium Fast-dissolving tablets (FDT) formulation. The tablets underwent evaluation for hardness, thickness, drug content, friability, weight variation, in-vitro disintegrating time study, and in-vitro drug release study.

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