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DEVELOPMENT OF NOVEL PROCESS FOR SYNTHESIS OF 2-PHENYL-4H-3,1-BENZOXAZIN-4-ONE THROUGH MICROWAVE SYNTHESIZER

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ABSTRACT
The microwave assisted synthesis approaches comply to all 12 principles of green chemistry. The enhanced penetration power of microwaves are supposed to be the main troubleshooter in field of synthetic chemistry. The Quality by Design (QbD) approach has been used by several formulation chemist but we implemented this approach in synthetic chemistry. The novel proposed method was firstly developed using Quality by Design approach and then the method was improvised for wet lab synthesis. The statistical validation of the method was and finally spectral analysis confirmed the structure of the synthetic compound. The validation of the proposed method was carried out and these validated batches were simultaneously compared with the conventional procedure for synthesis of 2-phenyl-4H-3,1-benzoxazin-4-one. The results of the spectral data, validation and comparison showed that the proposed method was more economical than that of conventional method and also followed green approaches.

KEYWORDS: Microwave assisted synthesis, Quality by Design (QbD), benzoxazinones.

INTRODUCTION
The microwave region of electromagnetic spectrum has been developed and improvised in several technologies since 1970's but these have been used in the field of organic synthesis since 1980's. Several reports have been published in past decades that claims the efficacious role of Microwave technology[1] in chemistry. The slow uptake of the technology has been attributed to its initial lack of controllability and reproducibility, coupled with a general lack of understanding of the basics of microwave dielectric heating. However, in the past few years, heating chemical reactions by microwave energy has been an increasingly popular theme in the scientific community. Since the first published reports on the use of microwave irradiation to carry out organic chemical transformations by the groups of Gedye and Giguere/Majetich in 1986.[2] The microwave assisted synthesis uses all the 12 principles of green chemistry and transforms the chemistry approaches towards E-Chemistry where "E" stands for Easy, Effective, Eco-friendly and Economic.[3]

MATERIAL AND METHODS
The chemicals used for the synthesis were of LOBA and identified for its purity before use. The microwave synthesizer[4] was used for synthesis of compounds. Design Expert® was used for designing the experiment

Development and optimization of process by Quality by Design (QbD)
The novel method was first developed using the QbD[5] approach so that the optimization is possible. The 3 level factorial design model was used which consisted of 2 factors. Power and Time were the two factors that were selected for QbD. Lower, Higher and Average were the 3 levels based on which the model were developed. The model was operated at power of (100 watt, 200 watt, 300 watt) and for time of (5 min, 10 min, 15 min). The complete work of optimization was done at the pharmaceutical chemistry lab of Priyadarshini J. L. College of Pharmacy, Nagpur on Design Expert®.[6] The statistically approved batches were further approved for wet lab synthesis.

Statistical Validation of Process
Any process developed needs approval through the statistical parameters as ANOVA. Design expert provide in-built protocol for calculation of ANOVA, correlation values, P values etc. These statistical parameter were calculated and scrutinized for each models developed and comparison were reported.

Synthesis of 2-phenyl-4H-3, 1-benzoxazin-4-one
The 2-phenyl-4H-3,1-benzoxazin-4-one are widely used parent structures for the synthesis of several biologically active compounds.

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Open Access to Pharmaceutical and Medical Research

Open Access Research Article

Development and Validation of UV Spectrophotometric Method for Estimation Ibandronate sodium in Pharmaceutical Formulation

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ABSTRACT

A simple, accurate, precise, rapid spectrophotometric method for estimation of Ibandronate sodium in pharmaceutical formulation. Ibandronate sodium is one off the nitrogen carrying bisphosphonate. It prevents osteoclast-conciliate bone resorption, Paget's disease, postmenopausal osteoporosis. The maximum wavelength (λmax) of ibandronate sodium is 218nm. Linearity was observed in the concentration range 2-100µg/ml. The coefficient of variation value was found to be 0.3499. Amount of drug estimated from tablet formulation were in precise with label claim. The method was statistically validated as per ICH guidelines and can be successively applied for analysis for tablet formulation. The proposed method is economical and sensitive for estimation of ibandronate sodium in pharmaceutical formulation.

Keywords-Ibandronate sodium, ICH guidelines, Bisphosphonate, pharmaceutical formulation.

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INTRODUCTION

Bisphosphonates are a class of drugs that prevent the loss of bone density, used to treat osteoporosis and similar diseases. They are the most commonly prescribed drugs used to treat osteoporosis. They are called bisphosphonates because they have two phosphonates ($PO(OH)_2$) groups. They are thus also called diphosphonates**. Ibandronate sodium** is one of the nitrogen carrying bisphosphonate.[13] According to IUPAC nomenclature it is 3-(N-methyl-N-pentyl) amino-1-hydroxypropane-1,1-diphosphonic acid, sodium salt, monohydrate with the molecular formula $C_9H_{22}NO_7P_2Na.H_2O$ and molecular weight of 359.23. It prevents osteoclast-conciliate bone resorption.[16] It is precious for the cure of hypercalcemia of malignancy, Paget's disease, postmenopausal osteoporosis, and corticosteroid-induced osteoporosis metastatic bone disease. The activity of ibandronate on bone tissue is depending on its resemblance for hydroxyapatite, which is fraction of the mineral matrix of bone. In postmenopausal women, it decreases the high rate of bone mass, leading to, a net gain in bone mass.[15] For quantification of impurity and assay of ibandronate sodium, there are so many analytical methods have been determined. The aim of our study was to develop an easy responsive accurate and precise method for determination of ibandronate sodium in pharmaceutical formulations and bulk drugs using UV spectrophotometer.

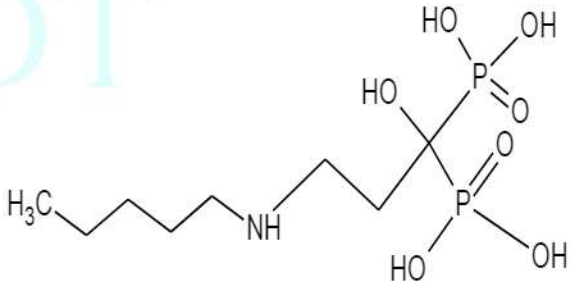

Fig.1 Structure of Ibandronate sodium

MATERIALS AND METHODS

Ibandronate sodium drug (Batch No. IBS/07/11) was obtained from JPN pharma Pvt Ltd, Mumbai. Shimadzu UV Visible Spectro- photometer (UV-1800) with asynchronized pair of 10 mm quartz cells were used for experimental reason.

1. Selection of Solvent

0.1N NaOH was selected as the suitable solvent for estimation of Ibandronate sodium after several trails.

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Open Access Research Article

Docking of 3,5-diphenyl- pyrazoline with monoamine oxidase A receptor and In-Silico structural property calculation

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ABSTRACT

Depression is one of the widely spread disorder in current population and is increasing exponentially. Now age group is not a mandatory clause for depression as children today are also affected. Inhibition of monoamine oxidase A (MAO A) isoform was reported for treating depression by elevating mood. Hydrazines have been also reported for their antidepressant action by inhibiting the monoamine oxidase. In this current study we have chosen 3,5-diphenyl-pyrazoline as ligand molecule which actually mimics the structure of cyclic hydarazine and was supposed to bind with MAO A receptor and inhibit it. Autodock software was used and standard protocol of docking was carried out by selecting grid of X:Y:Z (60:60:60). Other insilico properties were calculated using Molinspiration online property calculator, Protox II for structural property calculation and acute oral toxicity determination respectively. Results revealed though the ligand molecule was safe but not solely effective for MAO inhibition. Derivatization in the molecule is must increasing its biological potential.

Keywords: Depression, Docking, pyrazoline, Insilico toxicity determination

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INTRODUCTION

Depression is a common mental disorder that presents with depressed mood, loss of interest, or pleasure, decreased energy, feelings of guilts, disturbed sleep or appetite and poor concentration. While depression is the leading cause of disability for both males and female, the burden of depression is 50% higher for females than male (WHO 2008). It is the leading cause of disease for women in both high-income and low- and middle-income countries (WHO 2008)[1].Today, depression is estimated to affect 350 million people.

Monoamine oxidase (MAO) is a potent site for treating depression by elevating the mood of patients if these enzymes are inhibited. Moclobemide recall helped us to know more about MAO that it had two isoforms, MAO A and MAO B. Inhibition of MAO A helped the depression patients whereas inhibition of MAO B helped parkinson patients. Hydrazines have been reported for inhibitiig the MAO A iso-enzyme but have side effects.

Pyrazoline is a two heteroatom containing five membered heterocycle compound that has two nitrogen atom at 1,2 position[2]. The molecule has shown medicinally active property and is been reported in several peer reviewed journals[3]. The molecule selected as ligand posseses phenyl rings at 3 and 5 position. Pyrazolines mimic the structure of hydrazine in cyclic form. Aromatization of the pyrazoline molecule may increase the selectivity.

Objective

The objective of the current research is to screen the binding efficiency of 3,5-diphenyl-pyrazoline to MAO A receptor which is supposed to treat depression by inhibiting action of receptor and finally leading to elevation of mood. Another objective of study is predict structural and biological properties of ligand.

MATERIAL AND METHODS

a. Softwares and programs

Chemsketch a chemical molecule drawing tool was used to draw the ligand compounds[4]. Avogadro software was used to convert the .mol file to .pdb format[5]. Autodock 4.0 [6] a preliminary docking program was used for the semi-flexible protein ligand docking studies. Molinspiration online property calculator was used to study the chemical properties of the compound[]. The crystal structure of monoamine oxidase A receptor (MAO A) [PDB: 2Z5X] was downloaded from Protein Data Bank (PDB).

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Preventive effects of soy lecithin in combination with flavonoids on stz induced Diabetes Mellitus in rats

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Abstract

The present research work was design to investigate the anti-diabetic effect of Crude Soy lecithin (CSL) in combination with Flavonoids. Various dosed of CSL, quercetin and rutin were standardized and effective dose of CSL, quercetin and rutin was selected. Male Sprague Dawley rats weighing (200-225 g) were subjected to overnight fasting to induced diabetics by STZ (60 mg/kg i.p.) and blood sample was collected after 72 hrs to conform diabetics. Rats with blood glucose level ≥ 200 mg/dl were selected for further study. A dose of combination of CSL and quercetin with rutin p.o. was administered 60 min prior to blood sample withdrawal for estimation of glucose level. Positive control group were treated with STZ injected rats and negative control with metformin (100 mg/kg bw). Effect of CSL in combination with Flavonoids on Blood glucose level, Total Cholesterol level and Total Triglyceride level was evaluated. The results suggested treatment with CSL, quercetin and rutin were significantly decrease plasma glucose, cholesterol and triglyceride level in rats as compared to STZDiabetic rats. CSL show anti-diabetic effect alone and in combination with Flavonoids on STZ Induced Diabetes Mellitus (DM) in Rats.

Keywords

Crude soy lecithin, Flavonoids, Diabetic and STZ.

Introduction

Diabetes is a complex group of diseases with a variety of causes. Diabetes is a disorder of metabolism the way the body uses digested food for energy. With the help of the hormone insulin, cells throughout the body absorb glucose and use it for energy. Diabetes develops when the body doesn ' t make enough insulin or is not able to use insulin effectively, or both [1]. World Health Organization (WHO) indicates that DM is one of the major killers of humans in our time and affects 1– 5% of the world population [2,3]. By the year 2025, the number of individuals with diabetes is predicted to be more than 325 millionin spite of availability of new drugs, techniques and surgical intervention [4,5].There are two types of DM. Type 1 (insulin-dependent) that results from damage of pancreatic insulin producing cells and type 2 (non-insulin-dependent) that results from insulin resistance [6]. Among various factors that are being involved in the progression of DM, oxidative stress playsimportant role in etiology of DM and related complications [7]. Persistent hyperglycemia is responsible for increasing formation of free radicals, autooxidation of glucose and lipid peroxidation as well as disturbance of the antioxidant defense system. The resultant free radicals bring about intracellular oxidative stress [8].

Flavonoids in experimental DM may be related to their antioxidative/chelatory properties. Increased glycosuria indicated that inhibition of renal glucose reabsorption may also play a role in the hypoglycaemic effect of both Flavonoids [9].

Lecithin composed of phosphatidylcholine (PC), phosphatidyl inositol (PI), phosphatidyl ethanolamine (PE), Phosphatidylserin (PS) and phosphatidic acid (PA) [10]. Lecithin is one of the components of bile that helps protect against gallstone formation. PC may help dissolve gallstones [11].

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FORMULATION AND PHYSICOCHEMICAL EVALUATIONS OF POLYHERBAL GHRITA

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ABSTRACT

The use of ghee in suitable conditions with appropriate doses of desired preparations will render various benefits due to its potency to nullify toxins and toxic effects of drugs; and its capability to act as a media to dissolve and enhance the efficacy of the active principles in the drugs used. Aim of this study is formulation and Physicochemical evaluation of Polyherbal Ghrita. The Ayurvedic classics have mentioned Rasayana which is described as an herbal or metallic preparation that are health tonics to children, medicines to middle aged and rejuvenators to the elderly. Polyherbal is used as Rasayana since the ancient time especially for children in the management of memory. This research work emphasize practical approach in formulation and physicochemical evaluation of polyherbal ghrita by incorporating the traditional knowledge along with the modern technology in drug manufacture.

KEYWORDS: Polyherbal ghrita, herbal drugs, ghee, Rasayana, traditional knowledge.

INTRODUCTION

History of Ayurveda

The word Ayurveda is derived from the Sanskrit word ‘Ayus’ (all aspects of life from birth to death) and ‘Veda’ (knowledge or science) science of long life.[1] Ayurveda, the most ancient system of traditional medicine of the world, has been practiced in Indian subcontinent since 5000 BC. Ayurveda is a holistic approach towards life, health and disease management through medicinal herbs, minerals, diet, lifestyle and spirituality. Ayurveda was developed through daily experiences and mutual relationship between people and nature and thus not only cure diseases but also prevent disease, maintaining health and promoting longevity. This

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Pharmacological assessments of polyphenolic extract of *Cymbopogon citratus* leaves in rodent model of parkinson's disease

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ABSTRACT

Parkinson's disease (PD) is amongst the most common age-related neurodegenerative disorders. Natural compounds, especially the polyphenols have gained great interest as potential therapeutic agents in recent research. Thus, the present study was designed to evaluate the effect of polyphenolic extract of *Cymbopogon citratus (C. Citratus)* leaves in animal models of PD. In the given study PD was induced by administration of reserpine (5 mg/kg/day, i.p for 5 consecutive days), haloperidol (1 mg/kg, i.p.), in experimental animals. The symptoms of PD such as tremors, akinesia, rigidity and catalepsy were evaluated. Ethanolic extract of Cymbopogon citratus (CC) in doses of 100, 200 & 400mg/kg were administered per oral (PO). The L-dopa and carbidopa (30 mg/kg, PO) combination was used as a positive standard drug. Behavioural studies such as locomotor activity were performed. In catalepsy model, there is significant reduction in catalepsy duration in CC (100, 200, 400mg/kg) treated group as compared to the haloperidol group. In reserpine model, there is significant decrease of muscular rigidity, tremors, and akinesia in groups treated with CC (100, 200, 400mg/kg) dose dependently. Thus, the present study suggests the beneficial role of *C. citratus* leaves polyphenolic extract in treatment of parkinsonian like symptoms.

Keywords: Parkinson's disease; catalepsy test; haloperidol; reserpine, rotarod test, polyphenols, *Cymbopogon citratus*

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INTRODUCTION

In Parkinson's disease (PD) is a neurodegenerative disorder characterised by loss of dopaminergic neurons in the pars compacta of the substantia nigra (SN) results in parkinsonian syndrome[1]. It includes symptoms like bradykinesia, resting tremor, rigidity, and impairment of posture and gait[2]. Oxidative stress is thought to play an important role in dopaminergic neurotoxicity, mitochondrial dysfunction and neuroinflammation. Hence, there is a need of maintaining balance between oxidative stress and antioxidant system is necessary to preserve the structural integrity and optimal functions of brain[3].

Plant extracts and their constituents act as a natural source of antioxidants. The antioxidant activity of several plant extracts is due to several secondary metabolites especially phenolic compounds[4]. In recent times, many evidences support that the chronic consumption of polyphenols rich diet can promotes the healthy aging and prolongs the healthy life span by delaying the age-related disorders like PD. There are good evidences which suggest potential utility of polyphenols in treatment of PD[5].

Cymbopogon citratus (DC) Stapf (Poaceae), commonly known as lemongrass, is widely used in traditional medicine. The leaves mainly essential oils. Apart from this, leaves also constitute some other phytoconstituents including tannins, flavonoids, phenols, steroids, saponins, alkaloids etc. It is widely used in the food, pharmaceutical, cosmetic and perfumery industries for its essential oil. The literature survey indicates that *C. citratus,* possesses variety of pharmacological actions[6]. In addition to the use of volatile oil of the plant, its polyphenol rich extracts have been proven to have beneficial effects[7]. Apart from its therapeutic uses, *C. citratus* is also consumed as a tea, added to non-alcoholic beverages and baked food, and used as a flavouring and preservative in confections and cuisines. The aqueous extracts are also used in traditional medicine. Its infusion contains high levels of polyphenols, which are known for their antioxidant and anti-inflammatory properties[8]. However, in spite of reported antioxidant and neuroprotective activities, no major investigative reports found showing its role in Parkinson's disease.

Haloperidol and reserpine induced muscle rigidity models are important models, being comparatively simpler, is used extensively for examining potential symptomatic efficacy of new drugs in PD[9]. Thus, the current study envisages evaluation of the anti-parkinsonian effect of *C. citratus* in the management of PD. The study suggests that *C. citratus* leaves polyphenolic extract have potent antioxidant activity which

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DEGRADATION STUDIES OF CEFUROXIME TABLET BY USING SPECTROPHOTOMETRIC TECHNIQUES

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ABSTRACT

Forced degradation is a process whereby the natural degradation rate of a product is increased by the application of additional stress. A forced oxidative degradation study of Cefuroxime in tablet form was performed. The study was conducted based on available guidelines and main reference. Cefuroxime has a cepham ring in its structure. It can easily undergo hydrolytic, oxidative, thermal & photolytic degradation and the degraded products were analyzed by using UV spectrophotometry. The assay values of degraded products in different time intervals were analyzed by using UV spectrophotometry. Forced degradation was performed in tablet form using 0.1N Sodium hydroxide, 0.1N Hydrochloric acid, 30% Hydrogen peroxide solution respectively. Cefuroxime was subjected to hydrolytic, oxidative, photolytic and thermal degradation at different time intervals based on reference. The assay value of hydrolytic degradation of sample using 0.1N Sodium hydroxide was found to be 70.44% at the end of the 90 mins and 21.88% at the end of 1st day degradation. Complete degradation of Cefuroxime was observed at the end of 3rd day onwards. The assay value of hydrolytic degradation sample using 0.1N Hydrochloric acid was found to be 70.94% at the end of the 90 mins and 18.64% at the end of 1st day degradation. Complete degradation of Cefuroxime was observed at the end of 3rd day onwards. The assay value of oxidative degradation sample using 30% Hydrogen peroxide was found to be 67.90% at the end of the 90 mins and 59.12% at the end of 1st day degradation. Complete degradation of Cefuroxime was observed at the end of 3rd day onwards. In Thermal degradation only small amount of degradation was observed up to 5th

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APPLICATIONS OF NASAL NSAIDS IN ALZHEIMER'S DISEASE

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ABSTRACT

Alzheimer's disease (AD) and Parkinson's disease (PD) are the most common neurodegenerative diseases with age as the greatest risk factor. Epidemiological observation indicates that long-term oral administration of nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen to patients having rheumatoid arthritis results in reduced risk and delayed onset of Alzheimer's disease. Alzheimer's disease starts in the entorhinal cortex, which is closely connected to the olfactory nerves, and spreads anatomically in a defined pattern. Therefore, a nasal NSAID would readily reach the region of the brain where it is most likely to be therapeutic. This study provides a general overview on the role of neuroinflammation in these neurodegenerative diseases and an update on NSAID treatment in recent experimental animal models, epidemiological analyses and clinical trials.

KEYWORDS: Non-steroidal anti-inflammatory drugs, Alzheimer's disease, Parkinson's disease, cyclooxygenase, neuroinflammation, Prostaglandins etc.

1. INTRODUCTION

Alzheimer's disease (AD) is the most prevalent neurodegenerative disorder and the most common cause of dementia. An estimated 5.2 million Americans from different age-groups have AD in 2013. The total number of patients with AD dementia in 2050 is projected to be 13.8 million, with 7.0 million aged 85 years or older. Only symptomatic relief is being offered by the current therapeutic interventions and none being able to halt disease progression or reverse its symptoms. Cholinesterase inhibitors have consistently shown symptomatic benefits and arenow recognized as the standard treatment in patients with mild to moderate AD.[1]

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ESTIMATION OF ANTIDIABETIC DRUGS BY HIGH PERFORMANCE LIQUID CHROMATOGHRAPHY METHOD

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ABSTRACT

The determination of Metformin was carried out in pure and tablet forms. The drug was found almost stable to neutral and photolytic condition. Hence, the proposed method is suitable for application in quality-control laboratories for quantitative analysis of drugs individually. This research project deals with the studies on the "Development and validation of liquid chromatographic methods for the quantification of anti-diabetic drugs in formulations and biological samples. The need for drug analysis, chromatographic methodology (method development and optimization) and experimental results of drug quantification in dosage forms, biological matrix and validation of the HPLC method was used for single drug of antidiabetic class; Metformin as a development of the assay method. The mobile phase consisting of water and methanol in the ratio of 50: 50 at wavelength 239 nm, column C18 (phenomenex) and the flow rate 1 mL $min^{-1}$and retention time 2.6 mins. A simple, rapid, accurate and stability indicating HPLC method was developed which is economic, sensitive and time saving than other chromatographic procedures. It is user-friendly and importance tool for analysis of combined dosage form. The developed method was successfully applied to the determination of metformin in pharmaceutical formulations.

KEYWORD: HPLC, Antidiabetic Drugs, Metformin etc.

INTRODUCTION

High performance liquid chromatography (HPLC) is a chromatographic technique used to separate a mixture of compounds in analytical chemistry and biochemistry with the purpose of identifying, quantifying or purifying the individual components of the mixture. Before the

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OPTIMIZATION OF QUINOLINE SYNTHESIS BY QUALITY BY DESIGN

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ABSTRACT

Quinoline is one of the most important N-based heterocyclic aromatic compounds in the fields of medicinal and industrial chemistry, forming the scaffold for compounds of great significance. Quinoline recently is one of the priorities in lead selection by researchers because of its broad range of activities and also for their wide applications. These include anti-inflammatory and antitumor agents, the antimalarial drugs quinine and chloroquine, and organic light-emitting diodes. 6-Methoxy-8-aminoquinoline is a metabolite of primaquine belongs to 8-Amino Quinoline derivative which is used to treat malaria. The present article having focus on the optimization study of the synthesis of 6-Methoxy-8-nitroquinoline which is used in the synthesis of 6-Methoxy-8-aminoquinoline by QbD. The sulphuric acid and arsenic trioxide showed best results at 120^0C for 4 hrs. The net percentage yield was found to be 27%. The novel method can be emitable for industrial applications.

1. INTRODUCTION

Quinoline is one of the most important N-based heterocyclic aromatic compounds in the fields of medicinal and industrial chemistry, forming the scaffold for compounds of great significance. Quinoline recently is one of the priorities in lead selection by researchers because of its broad range of activities and also for their wide applications. These include anti-inflammatory and antitumor agents, the antimalarial drugs quinine and chloroquine, and organic light-emitting diodes. Quinolines were first synthesized in 1879, and since then a synthetic routes have been developed.[1] Many of these methods, such as the Skraup, Doebner–Von Miller, and Friedlander quinoline syntheses, are well-known but suffer from inefficiency, harsh reaction conditions, and toxic reagents.

The present article having focus on the synthesis of 6-Methoxy-8-nitroquinoline which is used in the synthesis of 6-Methoxy-8-aminoquinoline. 6-Methoxy-8-aminoquinoline is a metabolite of primaquine belongs to 8-Amino Quinoline derivative which is used to treat malaria.

It presents the optimization study of synthesis of 6-Methoxy-8-nitroquinoline.

Malaria is the complex mosquito born infectious disease which affect the humans and other animals and caused by parasitic protozoans (a group of single-celled microorganisms) belonging to the Plasmodium type. According to WHO, there was 212 million cases of malaria in 2015 and 429 000 malaria deaths. Most of the deaths occurred in the African region 92%.[2] The disease is most commonly transmitted by an infected female Anopheles mosquito. The mosquito bite introduces the parasites from the mosquito's saliva into a person's blood. The parasites travel to the liver where they mature and reproduce.[3] There are five species of Plasmodium that are P. falciparum, P.malariae, P. ovale, P. vivax and P. knowlesi. Which can infect and spread by humans? Most deaths are caused by P. falciparum because P. vivax, P. ovale, and P. malariae generally cause a milder form of malaria. The species P. knowlesi rarely causes the disease in the humans.[4]

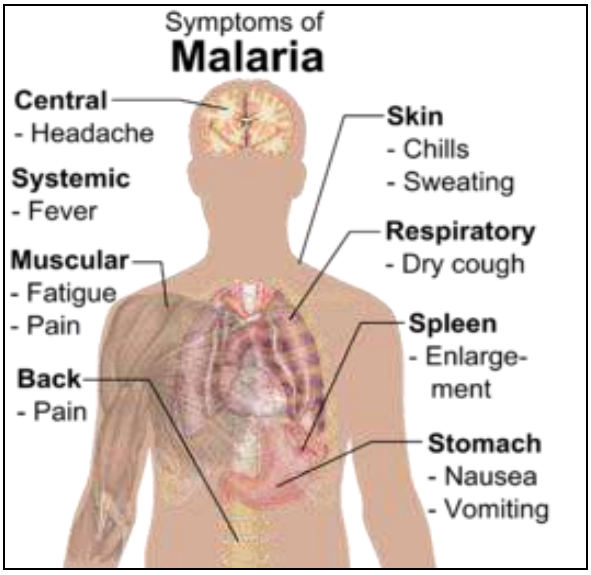

Fig.1: Sign and symptoms.

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FORMULATION, DEVELOPMENT, EVALUATION AND OPTIMIZATION OF HERBAL ANTIBACTERIAL MOUTHWASH

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ABSTRACT

Aqueous leaf extract of a tropical variety of Psidium guajava L. (Myrtaceae), Azadirachta indica (Meliaceae) & Glycyrrhiza glabra (Leguminosae) was used to formulate fifteen batches of herbal mouthwash. The antimicrobial potentials of these herbal mouthwash formulations in oral hygiene were assessed in vitro using a modification of the conventional methods for evaluating oral antiseptics. Formulations containing Psidium guajava, Azadirachta indica & Glycyrrhiza glabra leaf extract and a standard mouthwash (Povidone iodine, Chlorhexidine & Geofresh) served as test samples and controls respectivelly. The mouthwash formulations were screened for antimicrobial activities against cultures of Staphylococcus aureus, Escherichia coli and Bacillus subtilis. The extinction time of each formulation batch was determined against each test organism. The fifteen batches containing aqueous extract showed a high level of activity against the test organisms- E. coli and S. aureus comparable to the activity shown by the standard mouthwash (Povidone iodine, Chlorhexidine & Geofresh). The study encourages further stability and Jn vivo assessment to develop P.guajava, A. indica & G. glabra leaf extract as an ingredient of commercial mouthwashes.

KEYWORDS: Antimicrobial, Herbal Mouthwash, Psidium Guajava, Azadirachta, Indica, Glycyrrhiza Glabra.

INTRODUCTION

The importance of mouth and teeth cleanliness has been recognized from the earliest days of civilization to the 21st century. Patients and oral health practitioners are faced with a multitude of mouthwash products containing many different active and inactive ingredients.

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EVALUATION AND COMPARISON OF DISINFECTANT ACTIVITY OF SOME COMMERCIAL BRANDS BY USING STANDARD METHODS

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ABSTRACT

The aim of this study was to evaluate and compare some commercially available disinfectant for their efficacy at laboratory level. The commercially available brands of disinfectant i.e. Harpic and Patanjali was evaluated and compared for their efficacy. The three microorganisms namely *Escherichia coli*, *Staphylococcus aureus* and *Bacillus subtilis* were used to check the activity of the disinfectant depending upon the procedures. The efficacy of disinfectant were determined by standard procedures such as Phenol coefficient test, Rideal Walker test, Chick Martin test, Kelsey Skyes test, Disk Diffusion test, Serial Dilution test, Viable Count test. The effectiveness of the disinfectant were determined by their ability to reduce the microbial growth and activity. On the basis of results from the standard procedures the Harpic was found to be more effective than Patanjali as per our findings on laboratory scale.

KEYWORDS: Disinfectant, Microbes, Efficacy, E.coli, Phenol coefficient test, Kelsey Skyes test.

INTRODUCTION

A disinfectant is a chemical agent, which destroys or inhibits growth of pathogenic microorganisms in the non-sporing or vegetative state.[1] The term disinfection is generally used for a process in which micro organisms present on non living or inanimate objects and surfaces are killed by using chemical substances.[2] They are used to sterilise and clean the bacteria on non-living surfaces such as ceramic, wood, stone, or metal instruments and surfaces to control and prevent infection.[3] They may also be used to disinfect skin and other

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HOSPITAL WASTE MANAGEMENT: A REVIEW

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Keywords
Hospital Waste, Hospital waste management (HWM), Hospital Waste Disposal, Medical Waste

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ABSTRACT

Hospital waste management is a formal discipline and does occupy a critical place in the management of health care sector worldwide. The management of hospital waste requires its removal and disposal from the health care establishments as hygienically and economically as possible by methods that all stages minimizes the risk to public health and to environment also. The present scenario analysis of medical waste management systems was performed to grasp the varied handling and disposal procedures, the information and awareness of people concerned in medical waste generation, handling and disposal, and the potential impacts of the waste stream on both human health and the environment. A variety of ways were utilized by the medical facilities to dispose wastes as well as burning burial, entombing, selling, dumping, and removal by municipal bins. The waste disposal observe was found to be quite unsafe, and each clinical and non-clinical wastes were found to be thrown along. There was low awareness of the magnitude of the medical wastes issue by involved people at totally different levels from director or divisional head to waste pickers. There was no defense discovered in coping with waste disposal or laboratory analysis of infectious diseases. Medical waste incineration is one of the most identified and preferred disposal methods. It is necessary to signifies that there's an excellent potential to emit air cytotoxic pollutants from such incinerators if improperly operated and managed.

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REVIEW ARTICLE

Microneedle, An Innovative Approach to Transdermal Drug Delivery

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ABSTRACT:
Transdermal drug delivery system (TDDS) is a newer technique which offer delivery of drug via skin at controlled rate and prolong duration. Microneedles (MNs) are the recent advancement in the TDDS which can deliver high molecular weight drug by penetrating into the skin. MNs become popular due to avoidance of first pass metabolism, good patient compliance, rapid, easy and painless administration. Solid, coated, hollow, dissolvable and hydrogel-forming are the types of MNs having their own merits and demerits. MNs are generally prepared from silicon and used to deliver drugs, hormones, peptides, protein, vitamin, plasmid DNA, and vaccine in a safe and effective way. The working principle and the four different strategies for TDDS using a MNs array are poke and patch, coat and poke, poke and released, poke and flow technique. At present number of preclinical and clinical research is going on for the enhancement of permeability, stability and delivery of drug using MNs. This review focused on the types, manufacturing, current status and method of evaluation of MN in pharmaceutical research.

KEYWORDS: Transdermal drug delivery system, Microneedle, Biodegradable microneedle, painless drug delivery.

1.0 INTRODUCTION:

Significant improvement in the conventional drug delivery system has been made. Now a day controlled release formulations are becoming popular due to precise control on drug administration via different route in the body. A novel method of administration is developed which can control the rate and sustained the duration of action along with targeting of drug to the tissues.

Transdermal drug delivery system (TDDS) involves drug transport through the skin and reach to the systemic circulation for its action[1]. This novel approach controls the rate and reduces the side effects associated with oral therapy[2].

Skin had been viewed as an impermeable barrier to exogenous chemicals and numbers of methods are developed to enhance the transport across the skin i.e. chemical enhancers, iontophoresis, electroporation, sonophoresis, or mechanical enhancers[3]. TDDS was appeared as a potential non-invasive route of drug administration with the advantages of prolonged therapeutic action, decreased side effects, ease of use, better patient compliance, constant attainment of blood level, avoidance of first pass metabolism and no dose dumping[4]. In 1999 first transdermal patch containing scopolamine was developed to treat motion sickness[5].

Microneedles (MNs) are the advanced form of TDDS which can be employed to deliver hydrophilic and other large molecular weight drugs effectively[5]. MNs acts by making a non-invasive micro hole and penetrating the stratum cornea which creates a pathway for better drug permeation[6]. In recent decades, MNs have been extensively investigated for disease diagnosis, drug and vaccine delivery.

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Open Access Research Article

Development and Validation of UV Spectrophotometric Method for Estimation Ibandronate sodium in Pharmaceutical Formulation

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ABSTRACT

A simple, accurate, precise, rapid spectrophotometric method for estimation of Ibandronate sodium in pharmaceutical formulation. Ibandronate sodium is one off the nitrogen carrying bisphosphonate. It prevents osteoclast-conciliate bone resorption, Paget's disease, postmenopausal osteoporosis. The maximum wavelength (λmax) of ibandronate sodium is 218nm. Linearity was observed in the concentration range 2-100µg/ml. The coefficient of variation value was found to be 0.3499. Amount of drug estimated from tablet formulation were in precise with label claim. The method was statistically validated as per ICH guidelines and can be successively applied for analysis for tablet formulation. The proposed method is economical and sensitive for estimation of ibandronate sodium in pharmaceutical formulation.

Keywords-Ibandronate sodium, ICH guidelines, Bisphosphonate, pharmaceutical formulation.

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INTRODUCTION

Bisphosphonates are a class of drugs that prevent the loss of bone density, used to treat osteoporosis and similar diseases. They are the most commonly prescribed drugs used to treat osteoporosis. They are called bisphosphonates because they have two phosphonates ($PO(OH)_2$) groups. They are thus also called diphosphonates**. Ibandronate sodium** is one of the nitrogen carrying bisphosphonate.[13] According to IUPAC nomenclature it is 3-(N-methyl-N-pentyl) amino-1-hydroxypropane-1,1-diphosphonic acid, sodium salt, monohydrate with the molecular formula $C_9H_{22}NO_7P_2Na.H_2O$ and molecular weight of 359.23. It prevents osteoclast-conciliate bone resorption.[16] It is precious for the cure of hypercalcemia of malignancy, Paget's disease, postmenopausal osteoporosis, and corticosteroid-induced osteoporosis metastatic bone disease. The activity of ibandronate on bone tissue is depending on its resemblance for hydroxyapatite, which is fraction of the mineral matrix of bone. In postmenopausal women, it decreases the high rate of bone mass, leading to, a net gain in bone mass.[15] For quantification of impurity and assay of ibandronate sodium, there are so many analytical methods have been determined. The aim of our study was to develop an easy responsive accurate and precise method for determination of ibandronate sodium in pharmaceutical formulations and bulk drugs using UV spectrophotometer.

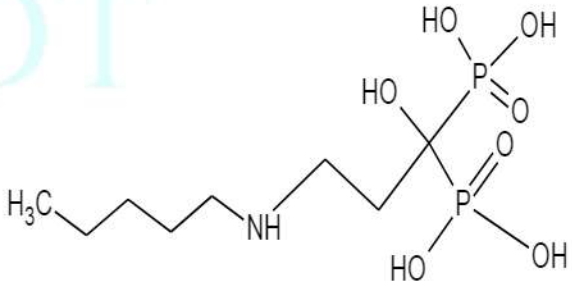

Fig.1 Structure of Ibandronate sodium

MATERIALS AND METHODS

Ibandronate sodium drug (Batch No. IBS/07/11) was obtained from JPN pharma Pvt Ltd, Mumbai. Shimadzu UV Visible Spectro- photometer (UV-1800) with asynchronized pair of 10 mm quartz cells were used for experimental reason.

1. Selection of Solvent

0.1N NaOH was selected as the suitable solvent for estimation of Ibandronate sodium after several trails.

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Guazuma ulmifolia LAM: A review for future view

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Abstract
Guazuma ulmifolia, Lam. known as West Indian elm or bay cedar, native of tropical America is been cultivated in India since a century. It contains alkaloids, tannins, saponins, flavanoids, terpenoids, cardiac glycosides and steroids. Isolation of octacosanol, taraxeroloac, friedelin-3-áoac, â-sitosterol, and Friedelinol-3-acetate in the leaves are reported. Heartwood contains kaempferol and fruit contains the sweet edible mucilage. Its essential oil is contains major compound Eugenol (10.13%). The isolation of epicatechin and procyanidins oligomers such as procyanidin B2, procyanidin B5, procyanidin C1 from bark is reported. Ethnobotanical uses of *G. ulmifolia* of the leaves, bark, fruit, root, stem bark are reported for properties like antidysenteric, antibacterial, anti-inflammatory, antimicrobial, antifungal astringent, depurative, diaphoretic febrifuge, emollient, hepatoprotective, Pectoral, stomachic, styptic, sudorific, refrigerant and vulnerary. The pharmacological evaluations on plant demonstrated till date are Antioxidant, Antihypertensive and Vasorelaxing Activity, Antidiabetic, Antiviral, Ant secretory, Antibacterial, Antifungal, Cytotoxicity, Gastro protective, Hepatoprotective, Neurological & Uterine stimulant activity. The purpose of this manuscript is to bring into focus the plant *G. ulmifolia* for exploring its multipurpose uses. Thus, Ethnopharmacology suggests several medicinal uses out of which antiviral, antibacterial, antidiabetic and gastro protective are yet to be scientifically proven

Keywords: *Guazuma ulmifolia L*, Bastardcedar, Kaempferol, Ethno pharmacological, Hepatoprotective

1. Introduction
Guazuma plum.ex Adans (sterculiaceae) a small genus of trees, native of tropical America, introduced into other parts of the world whose one species i.e *G. ulmifolia* Lam. syn. *G. tomentosa* commonly known as " mutumba" or guacimo is found in Latin American countries, including Brazil, is grown in India since 100 years. It is a small moderate- sized tree, with brown uneven bark and scattered branches, cultivated in gardens and as a roadside shade tree in the warmer parts of India. It grows up to 30m in height and 30–40 cm in diameter [1].

Leaves are distributed in an alternate pattern with two rows. They are oblong, ovate to lance-shaped, obliquely cordate, serrate margin and usually have a rough texture. The lea f has a darker green upper surface and the lower surface is pale green. The petiole are lean and 6-12mm long, and are covered with small "star-shaped" hairs [2].

Yellow and brown coloured flowers are arranged loosely or in a branched pattern around 2.5–5 cm in length and are found at the bottom of the leaves. There are round to elliptical shaped capsular fruits with many grey colored oval shaped seeds of 3mm in length [3].

The wood is yellowish to light brown, strong, light to medium heavy with rough surface. It is processed for furniture, panels of coaches, packing cases and slack cooperages. It is also used as fuel and for making charcoal [2, 4].

Distribution
Guazuma ulmifolia is distributed in the Caribbean, Mexico, Central America and Colombia, Ecuador, Peru, Bolivia, Paraguay, Argentina, and Brazil. The warmer regions of India especially Karnataka and Tamil Nadu have been cultivating them since long. Indonesia has recently introduced the species into their territory.

They are native to places such as Antigua and Barbuda, Argentina, Bahamas, Barbados, Bolivia, Brazil, Colombia, Cuba, Dominica, Dominican Republic, Ecuador, Grenada, Guadeloupe, Guatemala, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands, Nicaragua, Costa Rica, Panama, Paraguay, Peru, Puerto Rico, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Trinidad and Tobago, Virgin Islands (US). They are considered exotic species to India and Indonesia [4].

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Open Access Research Article

Development and Validation of UV Spectrophotometric Method for Simultaneous Estimation of Metformin HCl and Repaglinide in Pharmaceutical Formulation

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ABSTRACT

Objective: A new, simple, rapid, accurate and economical method have been developed for the simultaneous estimation of Metformin HCl and Repaglinide in formulation.

Method: The absorbances of both the drugs were determined at 238 nm and at 294 nm. The linearity was observed in the concentration range of 2-100 µg/ml and 1-35 µg/ml for Metformin HCl and Repaglinide respectively. The method was validated as per ICH guidelines.

Result: The recovery of Metformin and Repaglinide was found in the range of 98.24 ± 0.325 to 100.25 ± 0.756.

Conclusion: The proposed method was accurate, reproducible and economical and can be used successfully for quantitative estimation of Metformin HCl and Repaglinide in bulk and tablet dosage form.

Keyword:- Metformin, Repaglinide, UV- spectrophotometric method, simultaneous estimation

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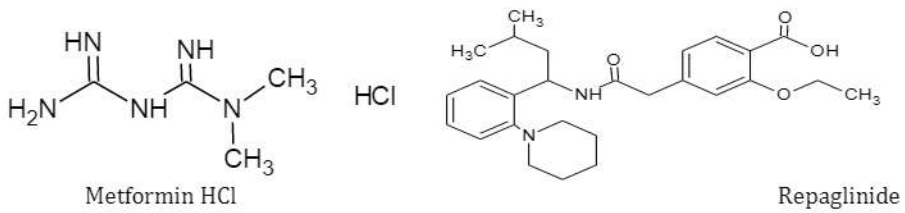
1. INTRODUCTION

Diabetes mellitus a chronic diseases across the world is a key disease for the exploring the therapeutic value of the drug [1]. The combined use of metformin and Repaglinide for type 2 diabetes mellitus was shown improved patient compliance by controlling the post prandial glucose levels and reaches normal glycemic levels. Metformin Hydrochloride (MET) (Figure 1) is a biguanide class of antidiabetic drug; chemically is N, N-dimethylimido dicarbonimidicdiamide hydrochloride. It is an oralanti-antidiabetic drug from the biguanide class.[2-3] It is the first-line drug for the treatment of type 2 diabetes, particularly in overweight and obese people and those with normal kidney function and evidence suggests it may be the best choice for people with heart failure. It is also used in the treatment of polycystic ovary syndrome. [4-9] Repaglinide (REPA) is the (Figure 1) Hypoglycaemic agents; Meglitinides, chemically it is (S)-2-Ethoxy-4-[2-[[methyl-1-[2-(1-piperidinyl)-phenyl] butyl] amino]-2-oxoethyl]-benzoic acid. For treatment of diabetes combinations with other hypoglycemic agents are commonly prescribed [10] In that 47.05% are two drug combination compares to single drug treatment (14.11%). There are various UV methods are available for estimation of this two drugs either individually or in combination with other drug and for both drug in combination two UV methods are available. Present work describes rapid, simple, sensitive, accurate and reproducible spectrophotometric methods [11]



Metformin HCl Repaglinide

Fig 1- Chemical structure of Metformin and Repaglinide

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NATURES APPROACH TO COUNTERACT DIABETES

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ABSTRACT

Diabetes is a common chronic ailment afflicting our society from various walks of life. The astronomic increase in the prevalence of diabetes has made it a major public health challenge. This chronic illness requires continuing medical care and ongoing patient self-management, education and support to prevent acute complications and to reduce the risk of long-term complications. Diabetes care is complex and requires multifactorial risk reduction strategies beyond glycemic control. A large body of evidence exists that supports a range of interventions to improve diabetes outcomes. These standards of care are intended to provide clinicians, patients, researchers, payers, and other interested individuals with the components of diabetes care, general treatment goals, and tools to evaluate the quality of care. It is clear that optimal diabetes management requires an organized, systematic approach and involvement of a coordinated team of dedicated health care professionals working in an environment where patient-centered high-quality care is a priority. The objective of this review is to update the diabetic patient with different approaches towards the systems of medicine like N-Naturopathy, A-Ayurveda, T- Tinctures from Homeopathy, U- Unani, R- Regulating food habits, E- Exercise and S- Siddha. Educating the diabetic person regarding causes, symptoms, disorders associated with Diabetes Mellitus, Self-medication and Self-monitoring are also the good strategies to counteract Diabetes which will reduce premature death worldwide.

Synthesis and Pharmacological Activity of Some 2-[6-(Phenyl) 2-Thio 1,3-Oxazin-3yl] Amino Benzothiazole Derivatives

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ABSTRACT:

Some new hydrazino group substituted benzothiazole derivatives have been synthesized and their characterization were identified on the basis of melting point range, Rf values, IR and 1H NMR spectral analysis. The derivatives were screened for anti-inflammatory (Carrageenan-induced paw edema test in rats), analgesic (Hot plate method) and anticonvulsant (Electric shock method) activities inflammatory, analgesic and anticonvulsant activities. The derivatives exhibited significant to moderate anti-inflammatory analgesic and anticonvulsant activities.

KEYWORDS: Hydrazino, Benzothiazole, Anti-inflammatory activity, Analgesic activity, Anticonvulsant activity.

1. INTRODUCTION: [1-6]

The chemistry and biological study heterocyclic compounds has been an interesting field for a long time in medicinal chemistry. Benzothaizole derivative are an important class of compounds, which is becoming increasingly important due to their broad spectrum of biological activities. Literature survey shows that many Benzothaizole derivatives are known to exhibit pharmacological activities such as antiviral and antitumor, antiproliferative, antimicrobial, antibacterial, anthelmintic as Cholinesterase inhibitor, antidiabetic, anti-inflammatory, antimalarial, antifungal etc. Hence synthesis of such compounds are of considerable interest. It is well known that the introduction of hydrazine into an organic molecule causes dramatic changes in its biological profile, mainly due to high electronegative atoms substitutedon hydrazine and acetophenone causes increase lipid solubility. Hence, In the present study, some new derivatives of 2-[6-(phenyl) 2-thio 1, 3-oxazin-3yl] amino benzothiazole have been synthesized.

Their characterization was done by spectroscopic methods. Research in this area is still unexplored, therefore the present study is directed towards the synthesis of novel derivatives of benothiazole with good yield and enhance anti-inflammatory, analgesic and anticonvulsant activities.

2. METHODS AND MATERIALS[7-14]:

Reagents grade chemicals were used without further purification. All the melting points were taken in open capillaries and are uncorrected. The purity of the synthesized derivatives was checked by Thin Layer Chromatography.

2.1 Synthesis of substituted 2-hydrazinyl 1, 3-benzothiazole:

Take equimolar amount of substituted aniline and conc. hydrochloric acid and triturate it thus solid of salt of Aniline hydrochloride obtained. Mix aniline hydrochloride salt and sulphur into 1:3 proportion respectively stir it continuously by addition of equivalent amount of carbon disulphide in KOH and add 15-20ml of ethanol, reflux it for 5hrs 2-mecaptobenzothiazole obtained, recrystallize with methanol. Take equimolar of 2-mecaptobenzothiazole and hydrazine hydrochloride and add 10-15ml of ethanol stir it and heat mixture at 150-155°C temperature for 2-3hrs, solid mass was obtained which recrystallize from ethanol, to get substituted 2-hydrazinyl 1,3-benzothiazole derivatives.

2.2 Synthesis of 2-[6-(phenyl) 2-thio 1,3-oxazin-3yl] amino benzothiazole derivatives:

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Synthesis and antimicrobial activities of some novel thieno [*2,3-d*]- Pyrimidin-4(3*H*)-One derivatives

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Abstract
Pain and inflammation are simultaneous responses in bacterial infections. In current clinical practice, the agents like antimicrobial drug are prescribed concurrently. A $POCl_3$ catalyzed, efficient, one-step and solvent-free synthesis of novel thieno [2, 3-d] pyrimidin-4(3H)-one derivatives from 2-amino-4,5-substitutedthiophene-3-carbonitrile has been developed using various aliphatic acid under conventional heating and microwave irradiation. The formation of compounds was confirmed using elemental analysis and spectroscopic techniques like FTIR, ^{1}H NMR and Mass spectroscopy. All synthesized compounds have been screened for their antimicrobial activity against *Escherichia coli* (Gram –ve strain), *Bacillus subtilis* (Gram +ve strain) for antibacterial activity and antifungal activities against *Aspergillus niger* and *Candida albicans.* The result showed that synthesized compounds exhibit weak, moderate and good antimicrobial activity. It was observed that the compounds 2a, 2c, 2d, 2e, 2f, 2g, 2j and 2k showed good antimicrobial activity whereas compounds 2b, 2i, 2j showed significant antimicrobial activity compared with standard drug Streptomycin and Amphotericin B respectively.

Keyword: $POCl_3$, Thieno[2, 3-d]pyrimidin-4 (3H)-one, Antimicrobial activity, Streptomycin and Amphotericin B.

Introduction

Medication revelation is ceaseless and iterative process, which begin with the recognizable proof of lead atom of wanted natural activity(lead age and closures with the streamlining of this lead(lead advancement) for choice of new hopeful particle in sedate improvement.[1] The attention to synthetic, physical physiological, biochemical properties, receptor locales, SAR and stereochemistry and so on is extremely huge in sedate plan for the fruitful advancement of medication particle.[2] Since sedate plan is a coordinated for building up the train which forecasts a time of adjusted medication, a medication lacking symptom. it looks to clarify impacts of natural structure or its physicochemical properties included.[3] It examines the procedures by which the medications delivered their belongings; how they respond with the cellular material of inspire a specific pharmacological impact or reaction. how they changed or detoxified, used or disposal by living being.[4] These idea are the building stones whereupon the structure of medication configuration in assembled. The various new advancements have been created and connected in tranquilize innovative work (R&D) to abbreviate the examination cycle and to decrease the costs.[5] Among them, computational methodologies have upset the pipeline of disclosure and advancement over the most recent 40 year, computational advances for medicate R&D have advanced rapidly, particularly in late decades with the extraordinary improvement of science, biomedicine, and PC ability.[6] The computational instruments have been connected in relatively every phase of medication R&D, which have incredibly changed the system of medication disclosure.[7]

Thiophene containing compounds are well known to exhibit various biological effect. Heterocycles containing the thienopyrimidine moiety are of intrest because of their intresting pharmacological and biological activities.[8-9] They bear structural analogy and isoelectronic relation to purine and several substitutedthieno[2,3-*d*] pyrimidine derivatives shown to exhibit prominent and versatile biological activities [10-11].Over the last two decades, many thienopyrimidines have been found to exhibit a variety of synthesized as potencial anticancer,[12] analgesic,[13] antimicrobial[14-15] and antiviral agents.[16]

Recently, we reported some reviews on pyrimidinethiones[17] and condensed pyrimidines, namely pyrazolo-pyrimidines[18] and furopyrimidines.[19] The work deals with the study of the synthesis, reaction and biological application of thienopyrimidines in veiw of their great importance.in the last decade, thienopyrimidines were review.[20] The three fundamental thienopyrimidines systems are thieno[2,3-*d*]pyrimidine (I), thieno [3,2-*d*] pyrimidine (II) and thieno [3,4-*d*] pyrimidine (III).This article aimed to show the recent novel precursors to synthesize thienopyrimidine derivative and reported their application in pharmaceutical and biological evaluations in the last decade.[21-23] Various synthetic approaches have been utilized for the synthesis of thienopyrimidines. Recently, Bakavoli et al. used molecular iodine as an oxidising agent for the synthesis of thienopyrimidines via an oxidative heterocyclization reaction. However, the synthesis of thienopyrimidine from 2-amino-4, 5-substitutedthiophene-3-carbonitrile requires two steps and solvant-free method to generate a series of thieno [2,3-d] pyrimidin-4(3H)-one derivatives. In recent times, microwave assisted

Synthesis and Pharmacological Activity of Some 2-[6-(Phenyl) 2-Thio 1,3-Oxazin-3yl] Amino Benzothiazole Derivatives

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ABSTRACT:

Some new hydrazino group substituted benzothiazole derivatives have been synthesized and their characterization were identified on the basis of melting point range, Rf values, IR and 1H NMR spectral analysis. The derivatives were screened for anti-inflammatory (Carrageenan-induced paw edema test in rats), analgesic (Hot plate method) and anticonvulsant (Electric shock method) activities inflammatory, analgesic and anticonvulsant activities. The derivatives exhibited significant to moderate anti-inflammatory analgesic and anticonvulsant activities.

KEYWORDS: Hydrazino, Benzothiazole, Anti-inflammatory activity, Analgesic activity, Anticonvulsant activity.

1. INTRODUCTION: [1-6]

The chemistry and biological study heterocyclic compounds has been an interesting field for a long time in medicinal chemistry. Benzothaizole derivative are an important class of compounds, which is becoming increasingly important due to their broad spectrum of biological activities. Literature survey shows that many Benzothaizole derivatives are known to exhibit pharmacological activities such as antiviral and antitumor, antiproliferative, antimicrobial, antibacterial, anthelmintic as Cholinesterase inhibitor, antidiabetic, anti-inflammatory, antimalarial, antifungal etc. Hence synthesis of such compounds are of considerable interest. It is well known that the introduction of hydrazine into an organic molecule causes dramatic changes in its biological profile, mainly due to high electronegative atoms substitutedon hydrazine and acetophenone causes increase lipid solubility. Hence, In the present study, some new derivatives of 2-[6-(phenyl) 2-thio 1, 3-oxazin-3yl] amino benzothiazole have been synthesized.

Their characterization was done by spectroscopic methods. Research in this area is still unexplored, therefore the present study is directed towards the synthesis of novel derivatives of benothiazole with good yield and enhance anti-inflammatory, analgesic and anticonvulsant activities.

2. METHODS AND MATERIALS[7-14]:

Reagents grade chemicals were used without further purification. All the melting points were taken in open capillaries and are uncorrected. The purity of the synthesized derivatives was checked by Thin Layer Chromatography.

2.1 Synthesis of substituted 2-hydrazinyl 1, 3-benzothiazole:

Take equimolar amount of substituted aniline and conc. hydrochloric acid and triturate it thus solid of salt of Aniline hydrochloride obtained. Mix aniline hydrochloride salt and sulphur into 1:3 proportion respectively stir it continuously by addition of equivalent amount of carbon disulphide in KOH and add 15-20ml of ethanol, reflux it for 5hrs 2-mecaptobenzothiazole obtained, recrystallize with methanol. Take equimolar of 2-mecaptobenzothiazole and hydrazine hydrochloride and add 10-15ml of ethanol stir it and heat mixture at 150-155°C temperature for 2-3hrs, solid mass was obtained which recrystallize from ethanol, to get substituted 2-hydrazinyl 1,3-benzothiazole derivatives.

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