A RETROSPECTIVE STUDY OF ASSESSMENT AND DRUG UTILIZATION OF CARDIOVASCULAR DISEASE PATIENTS IN TERTIARY CARE HOSPITALS

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Abstract: Study of prescription pattern is an important to determine the rationality of drug therapy and to maximize the utilization of drugs resources. A total of 200 prescriptions of the patients attending cardiology outpatient department over a period of six months were randomly identified. The average number of drugs prescribed was(8.3%) encounters with an injection prescribed(20%), medicine prescribed from National list of Essential medicine were(76%), apart from that some other class of drugs also prescribed for patients with different comorbidities. Majority of drugs were prescribed as single drugs (96.5%). The most commonly prescribed single drug was clopidogrel (27.5%) and FDC were clopidogrel +Aspirin (7.5%). The most commonly prescribed single drug was Aspirin and FDC was Aspirin+clopidogrel. The important finding of this study is that the FDC drugs expected effective in use from all classification of cardiovascular disorder symptoms.

Key Words: Cardiovascular drugs, Drug Utilization Pattern, single Dose, Fixed Dose Combinations, and National List of Essential Medicine.

Introduction

The World Health Organization (WHO) reports an estimated 17.9 million people are died from cardiovascular disease (CVDs) in 2016, representing 31% of all Global deaths of these to maximize the utilization of resource. Studies on drug utilization pattern have become a potential tool to be used in the evaluation of health-care system. Drug utilization research encourages rational prescribing of drug contribute to the knowledge of current use of drugs in the society and explore whether a particular intervention affects the drug use in the population by observing the drug use pattern. Hence, this study was planned to assess the Drug Utilization Pattern in the cardiology outpatient department at different tertiary care Hospitals in Telangana using the WHO prescribing indicators and also measure the degree of implementation of national drug policy by the practitioners as indicated as prescribing drugs in National List Of Essential Medicine (NLEM), Drug utilization research facilitates identification of drug utilization and its impacts on health care systems. Drug utilization studies in India demonstrate the occurrence of wide spectrum of various cardiovascular drugs

A study on pattern of inotropes used in the intensive care unit at tertiary care hospital

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"An Overview of Study on the Management of Drug Induced Liver Injury in Tertiary Care Hospital"

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ABSTRACT

Hepatotoxic drugs are proved to cause severe damage to the liver if they are used more than the optimal range. The Drug induced liver injury is a common disease and can lead to fatal condition if they are not treated in early stages. The health care professional should regularly monitor the patients LFT values in the case of hepatotoxic drugs usage , Only the close monitoring of the lab values and proper dosage regimen can prevent the drug induced liver injury. The present study aim is to overview of study on the management of Drug induced liver injury in tertiary care hospitals. A prospective study was conducted to study the management of liver injury in tertiary care hospital. Among the 200 suspected hepatotoxic drugs 40(20%) are Anti tubercular drugs, 30(15%) are Antibiotics, 27(13%) are Antipsychotic drugs, 29(14%) are cardiac drugs, 31(16%) are analgesics , 26(13%) are Paracetamol, 17(9%) are Antidepressants. The treatment of Drug induced liver injury mainly includes the stoppage of suspected drug (Offending agent) and supportive care for reducing the symptoms of DILI. The clinical pharmacist plays a major role in preventing or minimizing the occurrence of DILI by providing information about the careful usage of medications to the patients in the case of hepatotoxic drugs . And also the Health care professionals should have enough knowledge about the hepatotoxic drugs usage in the proper dose and frequency. In the case of management of liver injury the life style of patients also plays a key role , the drinking alcohol and fatty foods can interrupt the management of DILI and may increases the recovery time and risk of the patient condition.

Keywords: *Hepatotoxic drugs, Drug induced liver injury, LFT values, etc.*

ORIGINAL ARTICLE

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Assessment of medication adherence in chronic diseases

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ABSTRACT

Majority of people with chronic diseases have poor adherence to their therapeutic regimen. It can result in various complications physialogically with undesirable metabolic conditions. The main objective of this study is to assess the level of satisfaction attained after medication in comorbidities (either having diabetes only or having hypertension only or having Hypertension and Diabetes) and also focussed on creating awareness in patients who do not follow the medication. A prospective cross sectional study was conducted at tertiary care hospital, Khammam, Telangana. 200 patients were approached and were interviewed with their consent. The purpose of the same was to collect the information on socio demographics, medication that is followed, and behavioural characteristics. A structured questionnaire MMAS-8 an eight itemed scale was involved to identify individuals, determine their levels, the reliability and validity of the medication followed. The scrutiny of this study found that there is a better medication adherence in individual's diseases (Hypertension, Diabetes) whereas in hypertension and diabetes condition high and low adherence were reported because of their awareness, negligence and risk factors respectively. The study concludes that there is an increase in Medication adherence in individual diseases whereas in hypertension and diabetes there are equal ranges of both low and high adherence.

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INTRODUCTION

Hypertension is a chronic disease. It is defined as the persistent elevation of arterial blood pressure with forceful blood against walls and it has another name 'high blood pressure'. Hypertension is one of the non-communicable disease (Lee *et al.*, 2013) which is also called as 'silent killer' and leads to major health issues. It is present across the world with 31.1% [1.39 billion] and this can be estimated using the increase in people by 1.56 billion in 2025 (Saqlain *et al.*, 2019). Hypertension is an avoidable risk factor for heart diseases which have mostly negative impacts on health that leads to morbidity and mortality (Riaz *et al.*, 2019). Most of the studies assess that the hypertension account 9.4 million deaths every year (Khayyat *et al.*, 2017) which makes the life expectancy less about 11.9% (Riaz *et al.*, 2019). A study stated that the adult populations were diagnosed around 26% of the world wide and it may increase with increase in age.

According to medical perspective diabetes belongs

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Carbamazepine and Clobazam induced severe iron deficiency Anemia - A rare case report

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Abstract

Carbamazepine and Clobazam are antiepileptic's used to control various types of seizures. Carbamazepine is an iminostilbene, and it is a front-line drug in antiepileptics. It acts on the voltage-dependent sodium channel. Clobazam is a benzodiazepine used for seizures, Lennox-gestalt syndrome, and febrile seizures in children. Both drugs had a good profile of efficacy to control seizures and some severe side effects like aplastic anemia, ataxia, SJS, Etc. In our case, the patient is a known case of seizure disorder and has used carbamazepine for 25 years and Clobazam for eight years. She developed an adverse drug reaction called severe iron deficiency anemia, which is classified as probable ADR using the Naranjos ADR probability scale. As per the modified shumock and thornton preventability scale, it is a preventable ADR.

Keywords: Carbamazepine (CBZ), Clobazam, iron deficiency anemia, dechallenge, ADR assessment

Introduction

The uncontrolled and aberrant brain electrical impulse that causes a seizure. Changes in consciousness, behavior, memory, and feelings are the result of this. Partial or generalized seizures are the two categories of seizures. The most frequent type of seizure in adults is a partial seizure, which begins with the activation of one region of the cortex and may show as simple symptoms like a motor or sensory phenomenon. Epilepsy affects about 50 million individuals worldwide, making it one of the most prevalent neurological conditions worldwide. People with epilepsy make up over 80% of the population in low- and middle-income nations. According to estimates, 70% of epilepsy sufferers could avoid seizures if their condition was adequately identified and treated.

The most popular method of treating epilepsy is using AEDs. In about 7 out of 10 people, they aid in seizure management. AEDs function by altering the balance of substances in your brain. They cannot treat epilepsy, but they can prevent seizures. Most antiepileptic drugs (AEDs) cause bone marrow toxicity and cause aplastic anemia, but in my case, AEDs caused iron deficiency anemia which is a rare phenomenon with unknown mechanism, there aren't many research that show the kinetics of Clobazam and Carbamazepine. We learned several fascinating things, such as the fact that these medications affect the mucosal layer and gastrointestinal pH, which reduces the absorption of dietary iron. Carbamazepine is an iminostilbenes class of

DESIGN, DEVELOPMENT AND *IN-VITRO* EVALUATIONOF FLOATING TABLETS OF ACYCLOVIR

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ABSTRACT

Objective: The objective of the present study was to formulate and evaluate gastroretentive drug delivery system of acyclovir.

Methods: Compatibility was studied by Fourier transform infrared spectroscopy. The floating matrix tablets were prepared by direct compression technique using hydroxy propyl cellulose and xanthan gum as release retardants. Microcrystalline cellulose was used as diluent. Sodium bi carbonate was used as gas generating agent. The prepared matrix tablets were evaluated for their physicochemical parameters such as weight variation, hardness, friability, content uniformity, buoyancy time and *in-vitro* dissolution.

Results: Pre and post compression parameters were evaluated and all the parameters were found within the acceptable limit. The drug release data were subjected to different models in order to evaluate release kinetics and mechanism of drug release. The release mechanism of acyclovir was evaluated on the basis of release exponent n value in peppas model. The n value of the formulations was found to be greater than 0.5 which indicated non-fickian diffusion and zero order kinetics.

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DESIGN, SYNTHESIS AND ANTIMICROBIAL ACTIVITIES OF 1,4-DIHYDROPYRIDINES

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ABSTRACT

Eight differently substituted 1,4-dihydropyridines have been synthesized by conventional and microwave irradiation methods using three components viz., ethyl acetoacetate (1) appropriate aldehyde (2) and ammonium acetate (3). The synthesized compounds have been purified and characterized by analytical and spectral data. The methods employed have been compared in terms of yields, reaction times. Microwave methods are easy simple, eco-friendly and the reactions are rapid and high yielding. The synthesized compounds have been screened for their antimicrobial activity by standard experimental procedures using ciprofloxacin as standard drug.

Keywords: Microwave irradiation (MWI), Dihydropyridines (DHPs), Calcium channel blockers.

INTRODUCTION

1,4-Dihydropyridines[1] are used to treat angina and hypertension, as calcium channel blockers[2]. Several of their derivatives are also reported to exhibit a variety of biological and pharmacological activities, viz., bronchodilator[3], anticancer4, antiasthmatic[5] anticonvulsant[6], platelet aggregation inhibitors[7]. Hence, this field has-ever-growing importance resulting in the development of new dihydropyridines. Keeping in view of an array of applications it has been considered worthwhile to synthesize some new biologically potent dihydropyridines by two different procedures, i.e., conventional method and microwave irradiation (MWI) methods[8] with an aim to screen for microbial activities. The synthesized compounds has been purified and characterized with the help of their analytical and spectral (IR, ^{1}HNMR & Mass) data.

Ethylacetoacetate (1) was subjected to a modified Hantzsch reaction (cyclocondensation) with aliphatic or aromatic aldehyde (2) and ammonium acetate (3) in alcohol as solvent by conventional and MWI methods **(Scheme-I).**

The product obtained in each of such reactions was purified and characterized as 4-alkyl/aryl-3,5-dicarboethoxy–2,6-dimethyl-1,4-dihydropyridines. In MWI method, the reaction time was considerably reduced (6 min only) with increased percentage yields (70-90%) when compared with the conventional method. Physical data of new 1,4-dihydropyridines are presented in **Table-1.**

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Design, synthesis and characterization of some new 1, 4-Dihydropyridines

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Abstract
A novel series of 4-alkyl/aryl/heteroaryl-3, 5-bis (4-chlorophenyl) carbamoyl-2, 6-dimethyl-1, 4-dihydropyridines have been synthesized by conventional and microwave irradiation methods. The synthesized compounds were purified and characterized with the help of their analytical and spectral (IR, ^{1}HMR and Mass) data. The methods employed have been compared in terms of yields, reaction times.

Keywords: calcium channel blockers, dihydropyridines, microwave synthesis

Introduction
1, 4-Dihydropyridines (DHPs) are the known class of therapeutic agents to treat angina and hypertension, as calcium channel blockers [1, 2]. Several of their derivatives are also reported to exhibit a variety of biological and pharmacological activities, viz., antitumor [3] antidiabetic [4], antioxidant [5], anti-inflammatory [6], anticoagulant and cytotoxic [7], anticonvulsant [8]. Hence, this field has-ever-growing importance resulting in the development scores of DHPs. Therefore, in continuation of our work on DHPs [9], it has been considered worthwhile to synthesize some new DHPs by two different procedures. i.e., conventional method and microwave irradiation (MWI) methods for comparison, to characterize the new DHPs by their analytical and spectral (IR, ^{1}H NMR and Mass) data.
The new dihydropyridines, have been synthesized by a modified and improvised Hantzsch one-pot synthesis starting with N-(4-chlorophenyl) acetoacetamides with an appropriate aliphatic, aromatic or hetero aromatic aldehydes and ammonium acetate in conventional method and as well as rapid microwave irradiation method (Scheme-1). The synthesized DHPs were purified and characterized as 4-alkyl/aryl/heteroaryl-3, 5-bis-N-(4-chlorophenyl) carbamoyl-2, 6-dimethyl1, 4-dihydropyridines. Physical data of 1, 4-dihydropyridines are presented in Table-1.

Table 1: Physical and analytical data of 4-Alkyl/aryl/heteroaryl-3, 5-bis-N-(4-chlorophenyl) carbamoyl-2, 6-dimethyl-1, 4-dihydropyridines (6a-i)

Compound Code	R	Mol. Formula	Mol. Wt	Method-A (% yield)	Method-B (% yield)	m.p (°C)
6a	H	$C_{21}H_{19}N_3O_2Cl_2$	416	54	78	168-170
6b	CH_3	$C_{22}H_{21}N_3O_2Cl_2$	429	46	69	124-126
6c	C_6H_5	$C_{27}H_{23}N_3O_2Cl_2$	491	52	78	186-188
6d	4-NO_2 C_6H_4	$C_{27}H_{22}N_4O_4Cl_2$	536	56	84	162-164
6e	4-$CH_3C_6H_4$	$C_{28}H_{25}N_3O_2Cl_2$	505	49	76	194-196
6f	4-OHC_6H_4	$C_{27}H_{23}N_3O_3Cl_2$	507	42	72	202-204
6g	3,4,5-$(OCH3)_3$ C_6H_2	$C_{30}H_{29}N_3O_5Cl_2$	581	58	68	186-188
6h	2_Furyl	$C_{25}H_{21}N_3O_3Cl_2$	481	42	72	240-242
6i	2-Pyridyl	$C_{26}H_{22}N_4O_2Cl_2$	492	54	80	221-223

Materials and Methods
The conventional and microwave assisted experimental procedures are given as general methods. The melting points were determined in open capillaries using Toshnwal melting point apparatus. Infra-red spectra of the compounds were recorded in KBr pellet using Shimadzu FTIR-8700 spectrometer, ^{1}H NMR spectra on omega-500 MHz spectrometer using

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Evaluation of Antimicrobial Profile of Some Novel 1, 3, 4-Oxadiazole Derivatives Followed by Molecular Docking Against 3G7E Bacterial DNA Gyrase

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ABSTRACT

The main aim and objective of the present research work was the design, synthesis, spectral characterization and evaluation of *in vitro* antimicrobial profile of some novel oxadiazole derivatives followed by molecular docking studies against bacterial DNA gyrase. The molecular structures of the synthesized compounds were assigned by IR, NMR and Mass spectral analysis. Molecular docking studies were carried out by AUTO DOCK programme. The *in vitro* antibacterial and antifungal activities were done by paper disk diffusion and agar streak dilution technique. In silico molecular docking studies the binding energy of synthesized compounds (AB1-AB8) were found to be -7.66, -7.67, -7.12, -7.12, -6.59, -6.46, -7.35, -5.09 which indicated that the compound had the high binding affinity towards the bacterial DNA gyrase with PDB id 3G7E and inhibit the function topoisomerase in comparison with standard drug ciprofloxacin (-7.44). The preliminary antimicrobial screening displayed that most of the synthesized compounds were executed moderate to good antimicrobial activity against following bacteria: *S. aureus (ATCC 9144), B. subtilis (ATCC 6633), S. epidermidis (ATCC 12228), P. Aeruginosa (ATCC27853), E.coli (ATCC25922), V. cholerrae (ATCC14035)* and fungi: *A. Niger (ATCC 9029), A.flavus (ATCC204304), C. albicans (ATCC10231)* and *B. dermatitis (ATCC 26199)* etc. All the synthesized compounds exhibited moderate to good antibacterial and antifungal activity with an MIC range of 12-37µg/ml. Among these eight synthesized oxadiazole derivatives, compound AB1; AB2 and AB7 were found to be very good antibacterial as well as antifungal potentiality with an MIC range of 13-12 µg/ml; 7-10 µg/ml and 15-18 µg/ml.

Keywords: Molecular docking; NMR; disk diffusion; antibacterial; antifungal and MIC etc.

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1. INTRODUCTION

1. 1. Structural features of Oxadiazole

Oxadiazoles are a class of heterocyclic aromatic chemical compound of the azoles family; with the molecular formula $C_2H_2N_2O$. There are four isomers of oxadiazole depending on the position of nitrogen atom in the ring [1]. In chemistry, methine is a trivalent functional group =CH−, derived formally from methane. It consists of a carbon atom bound by two single bonds and one double bond, where one of the single bonds is to hydrogen. The group is also called methyne or methene; its IUPAC systematic name is methylylidene or methanylylidene. Oxadiazole is derived from furan by replacement of two methine (-CH=) group by two pyridine type nitrogen (-N=) [2]. 1, 3, 4-oxadiazole is a five member heterocyclic aromatic compound containing two nitrogen atom at position three and four and one oxygen atom present at position one. 1, 3, 4 oxadiazole is thermally stable than other oxadiazoles, these oxadiazole are very important compound in medicinal chemistry due to their potential therapeutic efficacy.

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Original Research Article

Evaluation of Corticosteroid Utilization Pattern in the Various Departments of a Tertiary Care Teaching Hospital, Khammam

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Abstract

Corticosteroids have proved to be extremely effective in the treatment of acute inflammation and chronic inflammatory diseases. Drug utilization review (DUR) is an on-going, systematic, criteria-based program of medicine evaluations that will help ensure appropriate medicine use. The present study aim was to evaluate the drug utilization of Corticosteroids in the various department of a tertiary care teaching hospital, Khammam. A prospective observational study was conducted to evaluate drug utilization pattern of corticosteroids. Total 249 corticosteroids were prescribed Prednisolone was prescribed in 39.5% prescription followed by hydrocortisone in 27%, budesonide in 19%, methylprednisolone in 15.5%, Dexamethasone in 9.5%, Deltazacort in 7.5%, Prednisone in 4.5% and Fluhydrocortisone in 2% respectively. 34 ADRs were detected in the study due to corticosteroid use, facial puffiness was detected in 12.50%, headache in 14.70%, Hypernatremia in 14.70%, Hyperglycemia in 17.64%, hypertension in 26.47% and osteoporosis in 14.70%. 72.6% of the drugs were prescribed from the NELM list. Clinical pharmacists interact directly with patients in several different ways. Hence, the clinical pharmacist can perform potential role in health care system in assisting physician in altering the number of medications taken, the number of doses taken, improving the patient medication adherence, detect the adverse drug reactions, drug interactions, in patient counselling, improve the health related quality of life and decreasing the health care cost of the patient.

Keywords: Corticosteroid, drug utilization, rational use, adverse drug reaction, drug interaction etc.

INTRODUCTION

First isolation of cortisol was done in 1950; corticosteroids have proved to be extremely effective in the treatment of acute inflammation and chronic inflammatory diseases. However, despite their clinical success, oral corticosteroids (OCS) are used sparingly due to a broad array of serious adverse events including bone fractures, osteoporosis, and susceptibility to infections, hyperglycemia, and obesity amongst others [1-3].

Glucocorticoids are widely used as potent anti-inflammatory and immunosuppressive drugs to treat a wide range of diseases. However, they are also associated with a number of side effects [3, 4]. Corticosteroids are generally called as “steroids”; they highly improve symptoms and provoke impressive results in different conditions [5]. Due to their powerful anti-inflammatory and immunosuppressive actions, these drugs are being prescribed widely by physicians [5, 6]. It is most frequently prescribed for patients with respiratory conditions such as asthma or chronic obstructive pulmonary disease (COPD)[7, 8].

There has been increasing concern regarding the safety of corticosteroids, as a large number of patients are prescribed these drugs for long-term prophylactic treatment [8,9]. There are different aspects of concern with regard to systemic side effects like glaucoma, changes in bone mineral density and cataracts, psychiatric effects [10-13].

The World Health Organization has defined Drug Utilization Research (DUR) as “the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences [14, 15]”. Drug utilization evaluation can be used for the description of pattern of drug use, irrational use of drug, to improve the drug quality; the basic objectives drug utilization study is to

FORMULATION AND EVALUATION OF FAMOTIDINE TABLETS BY USING DIFFERENT BINDING AGENTS

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ABSTRACT: The release of drug is affected by various excipients presents in formulation.in case of tablets the role of binders is very important for release of drug.Thus in following study an attempt is made to improve the solubility and dissolution rate of a drug by use of natural excipients (Binding agent).Then the extracted starch was used as a binder in different concentrations, in famotidine tablets and evaluates them. The main objective is to formulate and evaluate famotidine tablet by using different types of binders by using direct compression & granulation method. The pre formulated tablets according to the pharmacopeial standards. To study the influence of different binding agents on drug release from formulation.

Keywords – Famotidine, Starch, Binder, Tablets, In-vitro dissolution

METHOD -

Wet granulation : The most widely used process of agglomeration in pharmaceutical industry is wet granulation. Wet granulation process simply involve wet massing of the power blend with a granulating liquid, wet sizing, drying and compression.

Dry granulation : In dry granulation process the powder mixture is compressed without the use of heat and solvent. Two methods are used for dry granulation. The more widely used method is slugging, where the powder is pre compressed and the resulting tablet or slug are milled to yield the granules and compressed to tablets.

INTRODUCTION

The most important drug delivery route is undoubtedly the oral route. Today drug delivery companies are focusing on solid oral drug delivery systems that offer greater patient compliance and effective dosages. These dosage forms contain a quantity of drug which is given as a single unit and they are known collectively as solid unit dosage forms.

A binder is a material that is added to a formulation in order to improve the mechanical strength of a tablet. In direct compression, it is generally considered that a binder should have high compatibility to ensure the mechanical strength of the tablet mixture the rational choice of a suitable binder a formulation requires extensive knowledge of which properties of a binder are important for the strength enhancing effect. The role of the binders in direct compression is especially important when a high dose of a poorly compressible drug is included in the formulation.Binders are agents used to impart cohesive qualities to the powder material during the production of tablets.

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Formulation and evaluation of topical hydrogel containing antifungal drug

Abstract

Terbinafine hydrochloride is an antifungal drug used in the treatment of fungal infections. The oral use of Terbinafine hydrochloride is not recommended as it has many potential side effects and undergoes hepatic first pass metabolism. This study was conducted to formulate and evaluate Terbinafine hydrochloride topical hydrogel for treatment of fungal infection of skin. The gel was formulated by using different gelling agents like HPMC, Sodium CMC and Polaxomer in three different concentrations. The prepared hydrogel formulations were evaluated for physico chemical parameters like physical appearance, pH, skin irritation, drug release, drug content and rheological parameters like spredability and extrudability. Antifungal activity of the prepared gels was evaluated using Candida as model fungus. The in vitro drug release from gels was evaluated using Franz diffusion cell containing cellophane membrane with phosphate buffer pH 5.8 as the receptor medium. Drug-excipients compatibility studies were performed by DSC and FT-IR analysis. All gel formulations showed acceptable physico chemical and rheological properties and results were found to be within the limits. The drug release was found to decrease with increase in polymer concentration. Among all the gel formulations Polaxomer showed superior drug release than followed by HPMC and sodium CMC. Formulation F4 shows the highest antifungal activity. Drug-excipients compatibility studies showed that there no interaction between the drug ad selected excipients.

Keywords: fungal infections, hydro gels, HPMC, polaxomer, Sodium CMC, Terbinafine hydrochloride

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Introduction

The topical route of drug delivery has been utilized to produce local effect for treating skin diseases and produce systemic drug effects.[1] Hydrogels are prepared both in cosmetics and in pharmaceutical preparations.[2] Gels often provide better release of drug substance independent of the water solubility of the drug when compared to creams and ointments.[3] Local application of therapeutic compounds has many advantages over oral and parenteral drug delivery systems. The advantages include ease of application to skin, ability to deliver drugs selectively to a site of local action, elimination of hepatic first-pass metabolism and better patient compliance.[4,5] Hydrogels are widely used in topical drug delivery systems due to their physical and chemical properties such as controllable and prolonged release of drug.[6,7] These formulations on contact with the skin forms a semi occlusive film over the skin and release the drug in controlled manner.[8] Lipophilic drug can cross the Stratum corneum, but rate of diffusion decreases as it enters the more aqueous lower regions of the epidermis.[9]

Fungal infections have been divided into superficial and systemic infections.[10] Antifungal drugs are classified according to their chemical structure as azoles, polyenes, allylamines, echinocandins. Terbinafine hydrochloride is an antifungal medication used in the treatment of superficial skin infections such as jock itch, athlete's foot. it is mainly effective on the dermatophyte group of fungi. It is an allylamine antifungal drug and has a broad spectrum of antimycotic activity at low concentrations. It acts by inhibiting fungal sterol biosynthesis which leads to a deficiency in ergosterol and to an intracellular accumulation of squalene, which results in cell death of fungus. It has been reported that terbinafine does not influence the metabolism of hormones or other drugs.[11,12] The goal of our research to formulate and evaluate Terbinafine hydrochloride hydrogels and also evaluate the in-vitro antifungal activity for prepared formulations.

Methodology

Materials

Terbinafine Hydrochloride was obtained from (Mecleods pharmaceutical, Baddi), Sodium CMC was obtained from (ultratech pharmaceutical Baddi), Poloxamer was obtained from (Signet Chemicals), HPMC was obtained from (Qualikem chemicals,Delhi), Glycerin, Propylene glycol, Methyl paraben, Propyl paraben was obtained from (S.D Fine chemical, Mumbai) of analytical grade.

Preparation of gel

All the ingredients were collected according to the formula the given in table 1. Required amount of gelling agents HPMC, Polaxomer and Sodium CMC were added in water with constant stirring at 500 rpm for about 2 hours. Drug was added to the above mixture. Glycerin, propylene glycol, methyl paraben and propyl paraben was added to it. Final weight was made with water. All the samples were allowed to equilibrate for 24 h at room temperature prior to performing evaluation test.

Drug-excipients compatibility studies

A-Differential scanning calorimetry (DSC)

The DSC studies were performed for the drug and the drug-polymer physical mixtures. The samples were inserted in aluminum pan and heated in the rate of 10ºC /min, to a temperature of 200ºC using a differential scanning calorimeter (TA-501; shimadzu corporation, Japan).

FORMULATION AND EVALUTION OF FAST DISINTEGRATING TABLETS OF VERAPAMIL SOLID DIPSERSION

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ABSTRACT:

Recent development in fast disintegrating technology mainly works to improve the quality of dosage forms without affecting their integrity. Current investigations deal with the formulation of fast dissolving tablet of Verapamil with the effect of different concentration of super disintegrants that disintegrates in oral cavity on contact with saliva & thereby improve drug release. Solid dispersion of PEG 6000 and Verapamil was successfully formed in 1:4 ratio. Fast disintegrating tablets of Verapamil were prepared by direct compression method. Disintegration time decreased with increase in the concentration of super disintegrant. Among all formulation, F9 containing 10% crosspovidone and sodium starch glycolate was found to have satisfactory results. In vitro release studies that almost 99 % of the drug was released from all the formulation were within 25 minutes. The FTIR analysis revealed that the Verapamil and super disintegrants used were compatible.

Key words: Verapamil, Solubility, Bio availability, Crosspovidone, Fusion method.

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Formulation and *In-Vitro* Evaluation of Metformin Hydrochloride Sustained Release Tablets

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ABSTRACT

The objective of the present study was to study the effect of hydrophilic polymers on sustained release of metformin hydrochloride from tablets. Compatibility was studied by Fourier transform infrared spectroscopy. The tablets were prepared by direct compression technique using Xanthan gum alone and in combination with HPMC as release retardant. Di calcium phosphate was used as diluent. The prepared matrix tablets were evaluated for their physicochemical parameters such as weight variation, hardness, friability, content uniformity and in-vitro dissolution. Pre and post compression parameters were evaluated and all the parameters were found within the limit. The drug release data were subjected to different models in order to evaluate release kinetics and mechanism of drug release. Formulation F5 was selected as best formulation. The dissolution of formulation F5 can be described by first order kinetics with fickian diffusion as the release mechanism.

Keywords: Matrix tablets, Metformin hydrochloride, Xanthan gum, HPMCK4M and HPMCK15M.

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INTRODUCTION

Diabetes is one of the major causes of death and disability in the world. Diabetes is a condition that impairs the body's ability to process blood glucose [1]. Diabetes mellitus is a heterogeneous metabolic disorder characterized by the presence of hyperglycemia due to impairment of insulin secretion, defective insulin action or both [2]. Diabetes mellitus can be classified into two main types. First is type I or juvenile diabetes which is also called as insulin dependent diabetes and second is type II or non insulin dependent diabetes mellitus. Type II diabetes is most common type of diabetes, according to the national institute of diabetes. The type II diabetes mellitus usually develops more in the adult age, affecting mainly the elderly and obese individuals. Metformin hydrochloride is a first line biguanide hypoglycemic agent used in the treatment of non insulin dependent diabetes mellitus, not responding to dietary modification. It does not produce lactic acidosis. Metformin improves glucose tolerance by lowering both basal and post prandial glucose by decreasing intestinal absorption of glucose, decreasing hepatic glucogenesis, lipogenesis and glucose uptake by adipocytes and muscle cells[3]. It is on the world health organization's list of essential medicines the most effective and safe medicines needed in a healthy system. Its oral bioavailability is 50-60% and its average elimination half life is 6.2 hours, require repeated administrations of high doses to maintain effective plasma concentrations, thus reducing patient compliance and enhancing the incidence of side effects.[4-7] Many studies have reported that the oral absorption of metformin is mainly confined to the small intestine. This could be attained by the development of sustained release matrix tablets. Administration of sustained release tablets of metformin hydrochloride could reduce the dosing frequency and improves patient compliance [8, 9].

Sustained release oral drug delivery systems are designed to achieve therapeutically effective concentrations of drug in systemic circulation over an extended period of time. Matrix systems are most popular among oral drug delivery systems because of their simplicity, low cost, ease of manufacturing, reduced dose frequency, improved patient compliance and efficacy [10]. In a matrix system drug was dispersed as solid particles within a porous matrix former of a hydrophilic or hydrophobic polymer, drug release from the tablet was controlled by the nature and properties of polymer. Hydrophilic polymers such as xanthan gum and HPMC which have been utilized individually or in blends to design hydrophilic matrix tablets to achieve controlled drug delivery dosage forms generally have reduced frequency of dosing, increased compliance, increased therapeutic effect, reduced side-effects, improved tolerability and reduced cost of treatment. Blending different hydrophilic polymers improves the physicochemical and release modifying properties of the resultant polymer leading to the design and

Formulation and *In-Vitro* Evaluation of Oral Disintegrating Tablets of Loratadine

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Abstract-

Aim: The aim of the present work is to develop oral disintegrating tablets of loratadine to enhance convenience and compliance of the elderly and pediatric patients for better therapeutic efficacy. **Materials and Methods:** Oral disintegrating tablets were prepared by using three super disintegrants such as crospovidone, croscarmellose sodium and sodium starch glycolate at various concentrations to enhance bioavailability of loratadine. The tablets were prepared by using direct compression method and evaluated for weight variation, hardness, friability, disintegration time and *in- vitro* drug release study. Prepared tablets were evaluated for compatibility by Fourier transform infrared spectroscopy. **Results and Discussion:** Fourier transform infra red spectroscopy studies revealed that there was no physicochemical interaction between loratadine and other excipients. All the tablets hardness was found to be around 3.2 kg/cm^2 and friability of all the formulations was less than 1%, weight variation and drug content were within official limits. **Conclusion:** The study clearly indicated that the type and concentration of superdisintegrants play an important role in disintegration and dissolution of drug from oral disintegrating tablets. Among all the formulations, maximum percentage of drug release and less disintegration time was found in F2 formulation containing 4% of croscarmellose sodium.

KEYWORDS: Fast dissolving tablets, loratadine, ODTs, crospovidone, croscarmellose sodium.

1. INTRODUCTION

Oral drug delivery is the most preferred route for administration of various drugs because of its simplicity, versatility, convenience, patient acceptability and easy manufacturing. Tablets and capsules are the most popular conventional solid oral dosage forms. These are designed to be swallowed. Formulation of oral disintegrating tablet was originally developed to address swallowing difficulties (i,e.,dysphagia) of tablets and capsules, experienced by pediatrics, geriatrics, mentally challenged, patients who refuse to swallow, patients on reduced fluid diet, stroke victims and bed ridden patients.[1,2] Oral disintegrating tablets are also called as orodispersible tablets, mouth dissolving tablets, fast disintegrating tablets, quick dissolving tablets, melt in mouth tablets, rapi-meltss and fast dissolving tablets. The European pharmacopoeia defines the term orodispersible as a tablet that can be placed in the mouth where it disperse or disintegrate rapidly in less than three minutes before swallowing. United States food and drug administration defines oral disintegrating tablets as "A solid dosage form containing medicinal substance or active ingredient which disintegrates rapidly usually

INVITRO ANTI –INFLAMMATORY ACTIVITY PROPERTIES OF LANTANA CAMARA LINN WITH METHANOL EXTRACT

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ABSTRACT: Lantana camara linn is a plant from the family-verbenaceae. It is found in many states of india, mostly in Telangana. Mainly in distributed areas, including road sides, railway tracks and canals. It is an ornamental plant but, in Asian times, it was used traditionally. The plant having various traditional uses. Parts of plant extract used traditionally such as healing of the wounds, cuts, skin itches, and eczema. The plant containing many more phyto constituents such as alkaloids, glycosides, saponins, steroids, terpenoids, carbohydrates, flavonoids and coumarines. It has various pharmacological activities anti oxidants, anti microbial, anti bacterial, anti fungal anti ulcerogenic, anti helmintic, anti glycaemic, anti-inflammatory, analgesic, anti cancer, anti tubercular etc. it has also having mosquito larvicidal activity. This research provides the evidence in the invitro anti -inflammatory activity of the lantana camara linn with methanolic extract showing an evidence to clear the all chronic inflammatory reactions which are in risk factor.

INTRODUCTION:

Inflammation is a process caused by different types and levels of cytokines, growth factors, Nitrous oxide, and prostaglandins i.e. produced by activated macrophages and other immune system cells.pro-inflammatory mediators are the key regulators of physiological process, but uncontrolled production of pro- inflammatory mediators can maintain or amplify the inflammatory response leading to chronic inflammation. Cyclooxygenase is present in two iso forms; COX-1(cyclooxygenase-1) and inducible form COX-2(cyclooxygenase-2). Although the inflammatory process promotes the elimination of damaging stimuli, the inflammatory process itself may also contribute damage of neighbouring tissues and in some cases increase the severity of pathology. Clinically inflammatory disorder or usually managed by steroidal and no steroidal, anti- inflammatory drugs.

Lantana camara linn, commonly known as red sage from verbenaceae family, is a noxious weed. Lantana camara linn has been well studied chemically. Two active toxic principles lantadine alpha and beta are considered the most important. In addition, two new penta cyclic tri terpinoids lanca marinic acid and lanca marinin have been obtained from aerial parts of lantana camara linn.

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RESEARCH ARTICLE

In vitro Antiinflammatory activity of *Tamilnadia uliginosa* Fruit extract

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ABSTRACT:
Inflammation is part of the body's immune response. There can be four primary indicators of inflammation like pain, redness, heat or warmness and swelling. Plants have the ability to synthesize a wide range of phytochemicals as secondary metabolites which shows anti-inflammatory activity. Inflammation is currently treated by NSAIDs. Unfortunately these drugs cause increased risk of blood clot resulting in heart attacks and strokes. Therefore, the developments of potent anti-inflammatory drugs from the natural products are now under considerations. A natural product of medicinal plants plays a major role to cure many diseases associated with inflammation. The conventional anti-inflammatory drug available in the market produces various side-effects. Due to these side-effects, there is need for the search of newer drugs with less or no side-effects. The present study was carried out to evaluate *in vitro* anti-inflammatory activity of ethanolic extract of *Tamilnadia uliginosa* fruit. Finally the study was concluded that the extract showed anti-inflammatory activities.

KEYWORDS: Inflammation, NSAIDs, Natural product and *Tamilnadia uliginosa.*

INTRODUCTION:

Man depends upon plants for his entire essentials requirement like food, clothing and shelter. Additionally, plants are a significant source of fine chemicals, which are used in the global pharmaceutical industry. Since many years ago, plants have been the traditional source of both raw materials and finished medicines. The majority of medicines used to cure ailments come from plants. Many studies on these natural products have been conducted during the previous few decades.

Scientific research on several traditional treatments has produced real medications. Several modern formulations also contain natural ingredients. The most significant medications derived from plant sources and currently used in therapeutic settings are ashwagandha, rauwolfia cinchona, opium, ergot, etc. Before being introduced to modern medicine, they were all recognised as healers in traditional medicine. Researchers are increasingly interested in identifying the active ingredients in their extracts with thorough follow-up examination of their mechanisms of action because it is impossible to ignore the medical efficacy of Indian traditional medicine.

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The word inflammation obtained from the Latin word inflamers which means state of being inflame or heat associated with redness and swelling. This is a complex, integrated host response found only in vertebrates[1]. Inflammation is either acute or chronic. Acute inflammation may be an initial response of the body to harmful stimuli. In chronic inflammation, the inflammatory response is out of proportion resulting in damage to the body[2]

There are various medicines for controlling and suppressing inflammatory crisis; steroidal (SAIDs) and non-steroidal anti-inflammatory drugs (NSAIDs) and immunosuppressant are the examples of these medications which are associated with adverse effects while in practice our goal is to apply minimum effective dose by the highest efficacy with the least adverse effects. Thus, we need to apply natural anti-inflammatory factors within medication therapy to achieve increased pharmacological action and the lowest degree of unwanted side effects.[3-5]

Herbal medicines are promoting subjects in medicine and, of course, we have to increase our knowledge about them. Search for safe and effective anti-inflammatory agents have been given priority in scientific research in herbal system of medicine. *Tamilnadia uliginosa* (Rubiaceae), also known as adavi manga or devathamalle in Telugu, devine jasmine in English, wagatta in Tamil, and bharani in Hindi, is a member of

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NEW DIFFERENCE SPECTROPHOTOMETRIC AND VISIBLE SPECTROPHOTOMETRIC METHODS FOR QUANTITATIVE ESTIMATION OF LAMOTRIGINE IN BULK AND PHARMACEUTICAL DOSAGE FORMS

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Abstract

New, simple and rapid Difference spectrophotometric & visible spectrophotometric methods were developed and validated for the quantitative estimation of Lamotrigine in bulk and pharmaceutical dosage forms using Schimadzu UV1800 instrument with UV Probe4.0 software. The analysis of samples was carried out by using quartz cuvette. The methods were optimized with instrumental conditions absorbance mode as measurement mode. 314nm, 520nm was selected as absorption maximum for difference spectrophotometric method & visible spectrophotometric method respectively. The analytical methods were validated as per ICH Q2A (R1) guidelines with respect to linearity, accuracy, precision, selectivity, LOQ and LOD. Difference spectrophotometric method was linear over a concentration range of 2-10µg/ml, Limit of Detection was found to be 0.33µg/mL and Limit of Quantification was found to be 1.01µg/mL. Relative standard deviation for intra-day precision and inter-day precision were within the acceptable limits. The mean recovery was found to be 99.76 %. Visible spectrophotometric method was linear over a concentration range of 2-10µg/ml, Limit of Detection was found to be 0.124µg/mL and Limit of Quantification was found to be 0.39µg/mL. Relative standard deviation for intra-day precision and inter-day precision were within the acceptable limits. The mean recovery was found to be100.01 %. From the results, it can be concluded that the developed methods were effective for quantitative determination of Lamotrigine (LTG) in bulk and pharmaceutical preparations without any interference of other constitute in the formulation. Tablets of different brand names were analyzed by the proposed method and assay of the drug was calculated. The developed methods could be readily adapted to routine quality control of Lamotrigine (LTG) by ordinary laboratories.

Keywords: Lamotrigine, Difference spectrophotometry, visible spectrophotometry, validation.

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Novel 2, 5 - Disubstituted 1, 3, 4 - Oxadiazole derivatives act as potential anticancer agent against human liver cancer cell line hepG2 and hepatocellular carcinoma in rat model

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Abstract
Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer in adults, and is the most common cause of death in people with cirrhosis. It occurs in the setting of chronic liver inflammation, and is most closely linked to chronic viral hepatitis infection (hepatitis B or C) or exposure to toxins such as alcohol or aflatoxin. Certain diseases, such as haemochromatosis and alpha 1-antitrypsin deficiency, markedly increase the risk of developing HCC. Metabolic syndrome and NASH are also increasingly recognized as risk factors for HCC. Non-alcoholic fatty liver disease (NAFLD) is a condition in which fat builds up in your liver. Non-alcoholic steatohepatitis (NASH) is a type of NAFLD. If you have NASH, you have inflammation and liver cell damage, along with fat in your liver. As with any cancer, the treatment and prognosis of HCC vary depending on the specifics of tumour histology, size, how far the cancer has spread, and overall health. The *in vitro* anticancer activity of synthesized compounds was carried out by SRB assay where as *in vivo* anticancer activity of synthesized compounds was carried out against DEN and CCl_4 induced hepatocellular carcinoma in rat model. In the present study it was displayed that all the synthesized compounds (AB1-AB8) had the potential ability to inhibit the proliferation of HEPG2 cancer cell with the highest percentage of growth inhibition 93.92%, 92.23%, 89.53%,91.56%, 92.91%, 89.22%, 93.59%, 91.22%, etc. at dose 300 µg/ml and IC_{50} values of synthesized compounds were found to be 2.3 µg/ml, 3.1 µg/ml, 3.6 µg/ml, 3.4 µg/ml, 2.9 µg/ml, 3.9 µg/ml, 2.5 µg/ml, 3.8 µg/ml etc. and std. drug 5-FU (94.26%) found to be 2.2 µg/ml. The *in vivo* experimental data obtained from HCC in rat model displayed that all the synthesized compounds had the potential capability to restore normal hepatocellular status by inhibition of portal tract necrosis, centrilobular degeneration, fibrosis and anaplasia which was indicated by reduction in α-fetoprotein (AFP) by the synthesized compounds (AB1-AB8), a potential tumour marker raised in liver cancer and in addition it was also found that all the synthesized compounds restored the levels of SGOT, SGPT and ALP at the same dose. The apoptosis of the cancer cells caused by the synthesized compounds were also observed and it was indicated that compound AB1; AB7; AB5; AB2; and AB4 were able to significantly induce HEPG2 cells apoptosis among the eight synthesized compounds.

Keywords: Hepatocellular carcinoma; metabolic syndrome; NASH; SRB assay; anaplasia; α-fetoprotein etc.

1. Introduction
The most numerous and important heterocyclic systems are those having five and six member rings having hetero atoms such as N, O, S, P, Si and B etc. Many heterocyclic compounds are employed in the treatment of infectious diseases due to their specific antimicrobial activity [1, 2]. Heterocyclic compounds have attracted the attention of medicinal chemists because of having broad spectrum of pharmacological activities and hence it continues to yield new therapeutic agents [3, 4]. One such medicinal important heterocyclic nucleus is oxadiazole moiety. Oxazole is the parent compound for a vast class of heterocyclic aromatic organic compounds. These are azoles with an oxygen and a nitrogen separated by one carbon Oxazoles are aromatic compounds but less so than the thiazoles. Oxazole is a weak base; its conjugate acid has a pKa of 0.8, compared to 7 for imidazole [5, 6]. Oxadiazoles are a class of heterocyclic aromatic chemical compound of the azole family; with the molecular formula $C_2H_2N_2O$. There are four isomers of oxadiazole depending on the position of nitrogen atom in the ring [7].

Phytochemical Screening and Antioxidant activity of *Helicteres isora* Linn. Fruit Extracts.

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ABSTRACT

Objective: To investigate Phytochemical Screening and Antioxidant activity of *Helicteres isora* fruit extract.

Methods: The petroleum ether and methanol extracts of fruits were screened for phytochemicals. The2, 2-diphenyl-1-picryl hydrazyl (DPPH) and Hydrogen peroxide (H_2O_2) radicals scavenging assayswere performed to measure anti-oxidant activity.

Results: The percentage yields for the petroleum ether and methanol extracts were 0.5%, and4.88% w/w, respectively. From the preliminary phytochemical screening *H.isora*fruit extracts showed positive results revealed the presence of alkaloids, aminoacids, proteins, carbohydrates,flavanoids,cardiac glycosides,saponin glycosides, tannins, steroids and terpenoids. The best DPPH free radical scavenging activity was obtained with the MEHI with an IC_{50} 43.95 µg/ml, while PEEHI showed less free radical scavenging activity IC_{50} 92.85 µg/ml as compared to standard ascorbic acid IC_{50} 23.75 µg/ml (Fig. 1). MEHI and PEEHI revealed hydrogen peroxide decomposition activity in a concentration dependent manner with an IC_{50} value of 38.61 µg/ml and 76.40 µg/ml respectively, while IC_{50} value for ascorbic acid was 21.75 µg/ml

Conclusions:methanol extractshowed more potent invitro antioxidant activity, with higher percentage inhibition, than the Petrolium ether extract. Total phenolic compounds and flavonoids are responsible for DPPH and H_2O_2radical scavenging activity.

Key words: *Helicteres isora*, phytochemical screening, anti-oxidants,DPPH,H_2O_2

Introduction

The recent abundant evidence confirmed the involvement of oxidative stress in the pathogenesis of several acute, chronic disorders and diseases. Exogenous antioxidants help the endogenous enzymatic and non-enzymatic antioxidant defence systems to control the production of reactive oxygen or nitrogen species[1]. Reactive oxygen species, such as superoxide anion (O_2 -) radicals, hydroxyl radicals (OH-) and hydrogen peroxide (H_2O_2) can cause oxidative damage to macromolecules, including DNA, proteins, lipids, and small cellular molecules[2] Free radicals have been occupied in the pathology of many diseases such as atherosclerosis, cancer, diabetes, and neurodegenerative disorders[3]. Naturalantioxidantsshowed potential to protect against the damage to the cellular organelles caused by these free radicals [4]. Antioxidants are the potent scavengers of free radicals [5]

Phytochemical Screening and Quantitative Determination of Phytochemicals in Hydro alcoholic extract of *Cleome gynandra L.* Whole plant

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ABSTRACT:

Medicinal Plants are well known for their medicinal uses for thousands of years and traditional medicines are still play a major role in treatments in various parts of the world. Medicinal plants are providing valuable drugs. These medicinal plants contain a biologically active chemical compounds known as phytochemicals which are responsible for health benefits and protect the human cell from any type of damage. Phytochemical screenings of the medicinal plants leads to the discovery of the new drugs. In our present research an attempt has been made to screen out the bioactive compounds of selected plant and the crude extract revealed the presence of alkaloids, flavonoids, phenols, saponins, glycosides and further it has been subjected to quantitative estimation of different phytochemicals. Quantitative analysis of some detected phytochemicals reveals high content of alkaloids (1.15g), followed by flavonoids (1.01/g) and saponins (0.77g).

KEYWORDS: Phytochemical screening, bioactive compounds, quantitative estimation and health benefits.

Potential Drug-Drug Interactions and Their Severity Among the Patients Admitted to General Medicine in Tertiary Care Hospital

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ABSTRACT

BACKGROUND: Drugs are mainly intended to decrease disease symptoms. Drug interactions are major challenges to all health care professionals in order to provide safe and effective treatment to a patient health care professional should aware of general drug-drug interactions. The main objectives of this study are to identify general 1. drug-drug interactions and their severity, 2. To improve the patient quality of life by avoiding drug-drug interactions and polypharmacy.

METHODS: A prospective and observational study conducted to identify the general drug-drug interactions. All the required source of data collected from patient medical records, case sheets and by interviewing patient.

RESULTS: In this study a total of 202 patients were enrolled out of them 145 prescriptions have 290 potential DDIs and among the 290, 100(34.48%) interactions were pharmacokinetic and 190(65.52%) were pharmacodynamic. In pharmacokinetic 45(15.51%), 42(14.48%), 13(4.48%) were absorption, metabolism, excretion type of interactions was observed. In pharmacodynamic additive 101 (34.82%), synergism 54(18.62%), antagonism 35(12.09%) interactions was observed. In total of 290 interactions 35(12%) were major type of interactions and 222(76.55%) were moderate type of interactions and 33(11.3%) were minor type of interactions identified.

CONCLUSION: prolong use of drugs which are involving in interactions may cause serious problem to the patient. Close monitoring of patient medication is necessary. Clinical pharmacists and other health care professionals required to know the general drugs involving interactions and consequences of PDDIs.

KEY WORDS: Drug-drug interactions, pharmacokinetic interactions, pharmacodynamic interactions, severity of interactions.

INTRODUCTION

Drugs are mainly intended to produce therapeutic effect and to alleviate disease symptoms and improve the patient quality of life. however, many drugs were reported to cause unwanted effects ranging from mild rashes to severe adverse reactions [1].

Multiple drug therapy is preferred in present days due to many reasons. The treatment of certain diseases like hypertension, diabetes cardiovascular diseases, infectious diseases and cancer and patient who is suffering from two or more

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Research JoMCCT

Preliminary Phytochemical Screening, Antioxidant, and Antibacterial Activity of *Helicteres Isora* Leaf Extracts

K. Mallikarjun[1], V. Divya[2], G. Ujwalasandya[3], V. Rajashakar[4,*]

Abstract

Objective: *To evaluate phytochemical screening, Anti-oxidant and anti-bacterial activity of Helicteres isora leaf extracts.* ***Methods:*** *Petroleum ether, chloroform, acetone, ethanol and hydroalcoholic extracts of leaves were used for the phytochemical screening. Anti-oxidant activity was measured using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) and nitric oxide (No) radical scavenging tests; anti-bacterial activity was assessed using disc diffusion techniques.* ***Results:*** *The percentage yields for the petroleum ether, chloroform, acetone, ethanol and the hydroalcoholic extract were 1.29%, 1.76%, 1.41%, 2.18% and 3.23% w/w, respectively. H. isora leaf extract produced favourable results for sterols and flavonoids during the initial phytochemical screening. The DPPH radical-scavenging activity of the concentrations of ethanolic and hydroalcoholic extracts, and L ascorbic acid needed for 50% inhibition free radicals were found to be 84.02 µg/mL, 76.05 µg/mL and 54.96 µg/ml, respectively. The inhibition of No radicals generated from sodium nitroprusside at physiological pH by the ethanolic and hydroalcoholic extracts and L-ascorbic acid was observed at concentrations of 85.05 µg/mL, 74.03 µg/mL, and 51.69 µg/mL, respectively.* ***Conclusions:*** *The hydroalcoholic extract's observed antibacterial and antioxidant properties may be due to the phytochemical components of these substances.*

Keywords: Helicteres isora, phytochemical screening, anti-oxidant, anti-bacterial, disc diffusion method.

INTRODUCTION

The pathophysiology of many acute and chronic ailments and diseases was established by the latest, overwhelming data. Exogenous antioxidants aid the defence mechanisms of endogenous enzymatic and non-enzymatic antioxidants in regulating the synthesis of reactive oxygen or nitrogen species [1]. DNA, proteins, lipids, and other macromolecules are susceptible to oxidative damage from reactive oxygen species, such as superoxide anion (O_2^-) radicals, hydroxyl radicals (OH^-), and hydrogen peroxide (H_2O_2) [2]. Free radicals have played a role in the pathogenesis of numerous diseases, including atherosclerosis, cancer, diabetes, and neurodegenerative disorders [3]. Natural anti-oxidants shown a capability to defend against the harm that these free radicals caused to the cellular organelles [4]. Antioxidants are the potent scavengers of free radicals [5].

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PROSPECTIVE OBSERVATIONAL STUDY ON IDENTIFICATION OF RISK FACTORS, AND PRESCRIBING PATTERNS OF MEDICATIONS USED IN CEREBROVASCULAR ACCIDENT (STROKE)

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Prevalence of microvascular complications of diabetes mellitus in tertiary care hospital

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Keywords:

Diabetes Mellitus, Microvascular complications, Nephropathy, Neuropathy, Retinopathy

ABSTRACT

The major cause of mortality and morbidity in the present generation is diabetes mellitus. The high prevalence of microvascular complications in diabetes mellitus occurs due to the untreated long duration of hyperglycemia. The main aim of the study is assessing the prevalence of microvascular complications of patients who are diagnosed with diabetes mellitus in public tertiary care hospitals. A retro-prospective observational study was conducted in the outpatient department of medicine at a tertiary care hospital. We took the samples of a total of 300 consecutive patients who are diagnosed with diabetes mellitus with microvascular complications were included in the study. To diagnose microvascular complications of diabetes mellitus clinical parameters, patient past and present history and other related investigations were included. A total of 300 patients in this study, 160 are males and 140 are females. The age range was 30-80 years, with a mean age of 49.43±13.45 years. 31% of patients are diagnosed with neuropathy, 35% of patients are diagnosed with retinopathy and 34% of patients are diagnosed with nephropathy. 68.6% of patients are affected with microalbuminuria, whereas 31.3% of patients are affected with macroalbuminuria. [HbA1C] levels are divided into two groups on the basis of glycated hemoglobin levels in subjects. The patients with HbA1C >7.5% are found to 61% and 39% are found to be in the range of HbA1C 6.5-7.5%. By comparing both patients with HbA1C>7.5% are more prone to microvascular complications than that of HbA1C 6.5-7.5%. The 23% subjects had normal BMI [18.5-24.99kg/m^2, 55% subjects were over-weight [25-29.99kg/m^2 and 21.3% subjects were obese [>30kg/m^2]. Early detection and identification of DM may reduce the risk of getting complications. To prevent or retard further progression of these complications, we should control blood sugar levels.

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INTRODUCTION

In endocrine disorders, the most common metabolic disorder is diabetes mellitus. Due to decreased insulin secretion with or without insulin resistance causes a serious condition called hyperglycemia. More than 2.6 million people in the UK have DM, and by the year 2025, this number is estimated to rise to 4 million. 8.2% is the annual prevalence of T2DM (Guariguata *et al.*, 2014). In the year 2015, 415 million people are globally suffering from DM as per the International Diabetes Fed-

PROSPECTIVE OBSERVATIONAL STUDY ON IDENTIFICATION OF RISK FACTORS, AND PRESCRIBING PATTERNS OF MEDICATIONS USED IN CEREBROVASCULAR ACCIDENT (STROKE)

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Abstract: ***Stroke is defined as the sudden death of the brain cells due to lack of oxygen, caused by blockage of blood flow rupture of an artery to the brain. The risk factors for Cerebrovascular Accident (Stroke) are Hypertension, diabetes mellitus, dyslipidemia, obesity, and some daily habits like consumption of smoking, alcohol, and high cholesterol food. Management should be tailored according to the disease and there is not a single recommendation that fits all. The major risk factors were Hypertension and diabetes (37.5%) followed by Alcohol (29.5%) and Smoking (5%). The majority of patients were diagnosed with Ischemic stroke (57.50%) followed by Hemorrhagic stroke (25.50%) and TIA (17%). In our study we found that the most of the patients were managed with Non-surgical treatment (97.50%) followed by Surgical treatment (2.50%). In our study we found that the most the class of drugs prescribed were Neuroprotectives (16.98%) followed by Antibiotics (13.20%), Anti-epileptics (12.51%) and Antiplatelet (9.55%).***

Keywords: Ischemic stroke, Hemorrhagic stroke, TIA, Hypertension, Diabetes, Smoking, Alcohol, Modified Rankin Scale.

Introduction

Stroke (CVA) is defined as the sudden death of the brain cells due to lack of oxygen, caused by blockage of blood flow or rupture of an artery to the brain.[1] Stroke is the third most common cause of death and the first leading cause of disability in developed and developing countries.[2] The incidence of stroke is increasing chiefly due to the aging population and other risk factors such as type-2 diabetes, hypertension, obesity, dyslipidemia, and others.[3] Different types of Stroke CVA) include Ischemic stroke, Hemorrhagic stroke(SAH/ICH), and Transient ischemic attack (TIA).[4]

Signs and symptoms include Sudden severe headache with no known cause.[5] Urinary incontinence, Paraesthesia, Seizures, Aphasia, Dysphagia, Hemiplegia, Deviation of mouth, Hemiparesis, Sudden loss of consciousness. Stroke is the second most frequent cause of death worldwide in 2011, accounting for 6.2 million deaths.[6] Approximately

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Original Article

Prospective Study on Identification of Risk Factors, Assessment of Respiratory Distress in Pediatrics

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ABSTRACT

Introduction: Respiratory tract infection (RTI) is defined as any upper or lower respiratory tract infectious disease. Globally, respiratory infections are the leading cause of infant and child mortality and a substantial burden of morbidity. Proper use of antibiotics is crucial and should be incorporated into the pharmaceutical care plan. **Aim:** The present study aimed to identify risk factors, and assess respiratory distress in pediatrics by using the ReSVinet scale. **Materials and Methods:** A prospective observational study was conducted for the age of < 2 years over 6 months with a sample size of 250 in the pediatrics department. **Results:** The Majority of the patients were from the age group of 0-1 year (81.6%). Female patients are more (56%). Out of 250 cases, most of the patients are from rural (69.2%). Most of the patients are found to be undernourished (72.4%). Cold, cough (78%), and breathing difficulty (19.6%) are more commonly occurring symptoms in patients with pulmonary infections. Respiratory distress (25.6%), and pneumonia (20.8%) are found to be more prominent diseases in pediatrics. Every preterm patient is affected with respiratory distress syndrome (74.8%). In our study upper-middle and lower-middle socioeconomic classes were affected by RTI. **Conclusion:** The study concludes that they are multiple aetiological factors in this group, which include Age, Gender, Residence, Gestation, and Nutrition can cause ARI. The ReSVinet Scale was found to have substantial reliability.

Keywords: Bronchodilators, Gestation, Pneumonia, Resvinet scale, Socio-economic class.

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INTRODUCTION

Respiratory Distress Syndrome (RDS) had identified that it can be caused due to primary lung surfactant inadequacy almost 70 years ago and continuous positive airway pressure was initiated approximately 50 years ago. Thereafter, there have been promoted various developments in pediatrics. RDS is the most prominent reason for neonatal intensive care unit (NICU) admission. Bovine surfactant (Calsurf) supplementation may therefore be advantageous because Neonatal Acute Respiratory Distress Syndrome (NARDS) is a reflection of pulmonary surfactant impairment.[2] These factors include prematurity, meconium-stained amniotic fluid (MSAF), cesarean section delivery, or prenatal ultrasonographic findings, such as oligohydramnios (presence of less volume of Amniotic fluid) or structural lung abnormalities.[3] The preeminent risk factors are prematurity and low birth weight. Other risk factors include gender, late preterm delivery, maternal diabetes, perinatal hypoxia and ischemia, and delivery in the absence of labor.[4] More frequently occurring respiratory diseases are Transient Tachypnoea of Newborn (TTN), RDS, neonatal pneumonia, Meconium Aspiration Syndrome (MAS), and persistent pulmonary hypertension of the newborn (PPHN), which result from obstacles during the prenatal to the postnatal transition period. The lungs are not fully developed until ages 2 to 5 years.[5,6] The primary cause of acute respiratory distress syndrome (ARDS) in children is a viral respiratory infection, although ARDS can be related to many other conditions, including pneumonia, sepsis, trauma, burns, pancreatitis, inhalation, transfusion, and cardiopulmonary bypass.[7] Management is directed as a plan of action to support the infants. Supplemental oxygen is required, and continuous Positive airway pressure (CPAP) and mechanical ventilation are also considered in severe cases. Replacement with exogenous surfactant is common and decreases the requirement for extracorporeal membrane oxygenation (ECMO) and the risk of pneumothorax.[8] Medication therapy is the most important aspect of pediatric management in health care settings like the hospital. Effective hospitalization of a neonatal patient is based upon a prominent diagnosis and the best duration of therapy, which commonly involves a medication regimen. The use of antimicrobial agents, specifical antibiotics has become common usage for the treatment of neonatal illnesses.[9] In rural areas,

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Prospective Study on Prevalence of Comorbidities and Drug Utilization in Chronic Kidney Disease Patients in Tertiary Care Hospitals of Khammam Region

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Abstract- The aim of the study was to describe treatment options for CKD patients to slow the progression of renal failure and potentially reduce morbidity and mortality. Highlight common comorbid conditions, such as cardiovascular disease and diabetes, and stress the importance of managing these conditions to potentially reduce morbidity and mortality among CKD patients. The study was a prospective observational study conducted over a 1-year period from January 2020 to December 2020. The prevalence of different comorbidities and drugs prescribed under the system was investigated. Among the 301 patients, the most prevalent comorbidities were cardiovascular disease (146) and diabetes mellitus (100). Drugs prescribed for various comorbidities and chronic kidney disease have been reported and classified according to the ATC system. Calcium channel blockers (79), alpha and beta blockers (62), diuretics (109), antihistamines (68), HMG-CoA reductase inhibitors (77), protons (190), antibiotics (116), have been widely used in our studio. This study demonstrates the variability of drug use in CKD patients. Studies on drug use on a regular basis provide a framework for healthcare professionals and help develop management strategies. However, the correct choice of drugs and the appropriate doses will reduce the incidence of nephrotoxicity and produce better clinical results. Infection management and antibiotic prescribing in CKD are critical to improving the quality of life of CKD patients.

Keywords: Co morbidities, chronic kidney disease, Drug utilization, Hypertension, Diabetes,

I. INTRODUCTION

Globally, CKD is a major threat due to an increasing incidence, a long hospital stay, a high cost of treatment, and a poor prognosis. CKD is a series of heterogeneous disorders that also affect renal structure and function [1]. The National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) defines CKD as kidney damage and / or a reduced glomerular filtration rate of less than 60 mL / min / 1.73 m2 for three months or more [2]. Hypertension (HTN) has been reported in the majority of CKD patients (stages III-V) [3,4]. Impaired kidney function causes a number of complications including metabolic abnormalities, endocrine complications, and an increased risk of cardiovascular disease. These complications, if not treated properly, can lead to an increase in the mortality rate [5].

Prospective Study on Prevalence of Symptoms and Complications in Chronic Kidney Disease Patients in Tertiary Care Hospitals of Khammam Region

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Abstract- Chronic Kidney Disease (CKD) is a global public health problem affecting the adult population and is associated with increased morbidity and mortality. The aim of our work was to study the prevalence of symptoms and complications in chronic kidney disease patients in tertiary care hospitals with sample size of 301 patients. Males were more prone to chronic kidney disease. Most cases were indentified in stage 4 and 5 which is increasing the chances of incidence of complication and mortality. Highest reported symptoms were edema in 172 patients, 125 patients had decreased urine output, 83 patients had breathlessness. The major complications reported in our study were heart diseases, diabetes mellitus, septic shock, urosepsis, fluid overload. From our study it was concluded that there is a rising prevalence of complications in the patients suffering with Chronic Kidney Disease. Early intervention may retard the progression of kidney disease and the associated complications.

Keywords: Co morbidities, chronic kidney disease, Drug utilization, risk factors, Prevalence.

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I. INTRODUCTION

Chronic kidney disease (CKD) is a heterogeneous disease that affects the structure of the kidney and its function. It is defined as kidney damage or decreased glomerular filtration rate of less than 60 mL / min / 1.73 m2 for 3 months or more [1-3]. It is characterized by a reduced ability of the kidneys to maintain low and normal levels of protein metabolism products (such as urea), normal blood pressure, hematocrit, sodium, water, potassium and acid-base balance [4]. Chronic kidney disease is an emerging global public health problem. CKD is increasingly common in developed and developing countries [5].

Chronic kidney disease (CKD) is associated with various comorbidities and adverse clinical outcomes, such as cardiovascular events, renal failure requiring renal replacement therapy, mortality and poor quality of life for survivors in general [6-9].

In India, the prevalence of CKD was observed to be 17.2% and 6% have CKD at stage 3 or worse and is seen more among men than women due to stress, alcoholism, hypertension, diabetes mellitus, smoking and cumulative risk. chronic vascular disease (CVD) factors [10-11]. Diabetes mellitus, hypertension, smoking, cardiovascular disease (CVD), age, chronic use of non-steroidal anti-inflammatory drugs (NSAIDs) and obesity are the main causes of CKD [12].

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Study of skeletal muscle relaxant activity of ethanolic extract of *Oryza sativa* var. Joha rice and *Citrus macroptera* var. Annamensis; two indigenous medicinal plants of Assam

Dr. Md. Habibur Rahman and Dr. M Chinna Eswaraiah

Abstract
Assam is the major state in North-East India and one of the richest biodiversity zones of the world having thousands of natural herbs and medicinal plants but a few are explored yet. The present study is aimed to explore two indigenous medicinal plants of Assam *Oryza sativa* var. Joha Rice and *Citrus macroptera* var. Annamensis for its skeletal muscle relaxant activity. The skeletal muscle relaxant activity was studied after pretreatment of ethanolic extract ethanolic extract *Citrus macroptera* var. Annamensis (EECM) and ethanolic extract of *Oryza sativa* var. Joha Rice (EEJR) with (250 mg/kg, p.o and 500 mg/kg, p.o) for 7 days in mice. The Rota-Rod Test and Grip Strength Test was used to study the muscle relaxant activity. ethanolic extract of *Citrus macroptera* (EECM) fruit peels showed significant activity in Rota rod as well as Grip strength test but of ethanolic extract of *Oryza sativa* var. Joha rice (EEJR) showed non-significant activity in Rota rod as well as Grip strength test instead it increases performance in both dose level.

Keywords: Assam, indigenous medicinal plants, *Oryza sativa* var. Joha rice, *Citrus macroptera* var

Introduction
Assam is the major state of India in North-East region, one of the richest biodiversity zones of the world consisting tropical rainforest, deciduous forests, riverine grasslands and numerous wetlands [1]. Assam is a land of thousands of natural herbs and medicinal plants due to its unique geographical location, abundant of fertile soil, friendly climate and high rain fall. Assam shares biggest contribution to world as Assam Tea (*Camellia assamica*). Moreover, it is found 300 medicinal plants have been identified but only about 5-10% of the plants and herbs are currently utilized [2] and the rest hold a vast potential and rest have vast potential thousands are till un-explored due to of knowledge, space and adequate facility.
So, by giving emphasis on research on herbal resources as part of organic medicines and food have immense potential to get marketed at the present scenario and can make Assam one of the excellent place to Collect Herbal Plants in India for making Ayurvedic, Herbal and Nautral medicines for benefit of human civilization.
There are some important literatures available for study of herbal resources of Assam. Bhattacharya PC *et al.* [3] mentioned some important rare about 30 medicinal plants of Assam, due to lack of knowledge, the general people are not aware of their uses and potentialities. Most of them are growing and dying unused, some are being destroyed willfully by the people for the purpose of animal feeding, fuel etc. and some are being burnt and cut down in Jungal. In another literature by Das NJ *et al.* [4] mentioned 31 ethno medicinal herbs of Kamrup district of Assam. Taid TC *et al.* [5] surveyed 21 medicinal plants in Dhemaji District of Assam. Sarma SK *et al.* [6] surveyed Medicinal plants used by Bodo tribe of Nalbari district in Assam. Barukial J *et al.* [7] surveyed ethnomedicinal plants used by the people of Golaghat district, Assam. Mondal P *et al.* [8] surveyed Herbal medicines useful for the treatment of diabetes in North-East India. Nath M *et al.* [9] surveyed Medicinal plants used in major diseases by Dimasa tribe of Barak Valley. Pandey A *et al.* [10] surveyed Medicinal Plants used by of peoples in Jorhat districts of Assam. Swargiary A *et al.* [11] surveyed Anti-diabetic Medicinal plants used by Local people of Kokrajhar District of Bodoland Territorial Council of Assam. Buragohain J *et al.* [12] surveyed ethnomedicinal plants used in skin diseases by some Indo-Mongoloid communities of Assam.

UV Spectrophotometric Method Development and Validation for the Estimation of Enalapril Maleate in Bulk and it's Pharmaceutical Dosage Form

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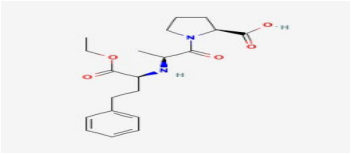
Abstract

A simple, economical, accurate, precise and less time-consuming UV spectrophotometric method has been developed and validated for estimation of Enalapril maleate in bulk and pharmaceutical formulations. In this method, Enalapril maleate exhibits maximum absorbance (λ max) at 216nm. The drug obeys Beer's law in the concentration range of 2-12µg/ml. The method was validated as per the International Conference on Harmonization (ICH) guidelines. Drug followed the linearity in the concentration range of 2-12µg/ml with correlation coefficient (R^2) of 0.998. The validity of the proposed method was assessed by applying the standard addition technique where the mean percentage recovery of the added standard was found to be 98.2% -100.3%. The limit of detection and quantification were calculated to be 0.0475µg/ml and 0.1439µg/ml respectively. The proposed method is recommended for routine analysis of Enalapril maleate in bulk and dosage forms in quality control testing laboratories. Since it is rapid, simple, accurate, sensitive and economical.

Key words: Enalapril maleate, Distilled Water, Method Development and Validation, UV-Visible spectroscopy.

Introduction

Enalapril maleate is an orally -active and long active non sulphydryl antihypertensive agent that suppresses the renin-angiotensin-aldosterone system to lower blood pressure.



MATERIAL AND METHODS:

Instrumentation: The work was done on a Shimadzu UV-visible spectrophotometer (model UV-1800 series), which contain a double beam and double detector configuration with a 1cm quartz matched cell. Ultrasonic ate cleaner (India) was used for degassing the mobile phase. Weighing was done on electronic balance (Sansui-vibra DJ-150S-S).

Selection of Solvents:

Based on the solubility study of distilled water was selected as the solvent for dissolving Enalapril maleate.

Preparation of Standard Stock Solutions of Enalapril maleate:

Stock Solution:

- STOCK -1: 20 mg Enalapril maleate + 50ml distilled water, finally sonicated for 5 minutes(400µg/ml).
- STOCK -2: From the above solution 5ml was taken, make up volume 50ml with distilled water(40µg/ml).

Determination of λ_{max} of Component: Aliquots (0.5ml,1ml,1.5ml,2ml,2.5ml,3ml) of prepared standard solution were transferred into series of 50 ml volumetric flasks and diluted by distilled water to give the concentration range of 2-12µg/ml. The above solutions were scanned over the range of 200 nm to 400 nm against reagent blank. The absorbance of each solution at 216nm was scanned against distilled water as blank.

Overlay Spectra of Enalapril maleate: The overlain spectrum of drug was recorded (Fig.1) and wavelength 216 nm were selected for further study.

UV Spectrophotometric Method Development and Validation for the Estimation of Lamivudine in bulk and its Pharmaceutical dosage form.

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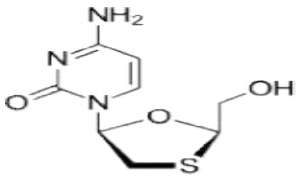
Abstract

A simple, economical, accurate, precise and less time-consuming UV Spectrophotometric method has been developed and validated for estimation of lamivudine in bulk and pharmaceutical formulations. In this method, Lamivudine exhibits maximum absorbance (λ max) at 271nm. The drug obeys Beer's law in the concentration range of 4-24µg/ml. The method was validated as per the International Conference on Harmonization (ICH) guidelines. Drug followed the linearity in the concentration range of 4-24µg/ml with correlation coefficient (R^2) of 0.999. The validity of the proposed method was assessed by applying the standard addition technique where the mean percentage recovery of the added standard was found to be 97.47% -101.54%. The limit of detection and quantification were calculated to be 0.0989µg/ml and 0.2997µg/ml respectively. The proposed method is recommended for routine analysis of Lamivudine in bulk and dosage forms in quality control testing laboratories. Since it is rapid, simple, accurate, sensitive and economical.

Key words: Lamivudine, HPLC grade water, UV-Spectrophotometry, Method Development and Validation.

Introduction

Lamivudine is used to treat hepatitis B infection. Lamivudine is in a class of medications called nucleoside reverse transcriptase inhibitors (NRTIs). It works by decreasing the amount of HIV and hepatitis B in the blood



Vi capsular Polysaccharide (Typhoid Vaccine) Production from Salmonella typhi In Shake Flask and Bioreactor Fermentation process

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Abstract

Typhoid Vaccine contains Vi capsular polysaccharide, which is obtained from the salmonella typhi organism during the fermentation. Vi capsular polysaccharide production was depended on the cell growth and cell mass, greater the cell growth and cell mass higher the production of Vi capsular polysaccharide in media. The Vi capsular polysaccharide is a liner homopolymer of 1-4, 2-Dexoy -2-N-acetly galacturoinc acid. The Vi capsular polysaccharide was obtained in fed batch culture is more than 2 times of the batch fermentation with different media compositions. The Vi capsular polysaccharide is associated in from of capsule of organism. When the cell pellet of feed batch culture was processed for obtaining the Vi polysaccharide is 3 times greater than the batch fermentation. The production of the Vi polysaccharide is completely based on the media components such as SCDM, Glucose, yeast extract and magnesium sulphate and fermentation parameters and conditions. The presence of High sugar and magnesium sulphate concentration in media, the Vi polysaccharide production was inhibited. The Vi polysaccharide content was calculated from the o-acetyl estimation (as per British Pharmacopeia).

Key words: Vi Polysaccharide, SCDM, Glucose, Yeast extract and Magnesium Sulphate.

I. INTRODUCTION

Typhoid fever is a infection caused by the bacterium salmonella typhi: Vertically all strains isolated from the blood or bone morrow sample from the patients with culture typhoid fever when tested in the laboratory where found express Vi polysaccharide (Jesudasoneatl.1994; Lesmana et al., 1980). The Vi capsular polysaccharide is a liner homopolymer of α 1-4, 2 deoxy-2-N-acetyl galacuronic acid (Heyns and kissing, 1967) and it biosynthesis is reviewed in detail Virlogeux-payant and popoff, 1996. The vi capsular polysaccharide is a virulence factor and the Vi antigen has been shown to be major protective antigen against typhoid disease (Robbins and Robbins.1984) today most of the burden of typhoid disease occurs in developing countries (Crump et al.2004) particularly were sanitary conditions and poor clean drinking water is not readily available.

In the relation to the more impoverished communities improving sanitary conditions is a distant goal so the most cost-effective short-term disease against typhoid fever remains vaccination of susceptible population. The emergence of antibiotic resistant strains of salmonella typhi in recent times wain and kidgell (2004) has intensified the problems posed by treating typhoid fever cases there by elevating the importance of Vaccination. Several typhoid vaccine are licensed for the use and include Vi polysaccharide vaccine and Ty21a live oral vaccine. Both of these vaccines has good safety profile and acceptable efficiency has been demonstrated in communities where the disease was endemic. The impoverished populations living at risk of the disease remains largely unvaccinated (Acosta et al.2004).

The Vi vaccine is well suited for public health programs in countries where typhoid is endemic as it only requires one dose and it is temperature stable. This vaccine is now licensed in more than 92 countries (WHO document). The ability to