Research Publications in the Year 2018-2019

S.NO.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication
1	Formulation and Evaluation of Metoprolol Tartrate Sustained Release Matrix Tablets	S. Harika Y. Shravan Kumar	Pharmaceutics	International Journal of Pharmaceutical Sciences and nanotechnology	2019
2	Effect of Resveratrol pretreatment on the oral bioavailability of buspirone in male albino rabbits	Y. Shravan Kumar, Mohammed Abdul Aziz Shahid	Pharmaceutics	International Journal Pharm Biological Sciences	2019
3	Novel drug delivery system for herbal drugs - and overview	Pavani	Pharmaceutics	Think India Journal	2019
4	A review on the development and evaluation of plant based emulgel formulations	Pavani	Pharmaceutics	International journal of research and analytical reviews	2019
5	Recent advances in nanotechnology for cancer therapy: a review	Pavani	Pharmaceutics	Journal of emerging technologies and innovative research	2019
6	Formulation and Evaluation of Montelukast Sodium Lozenges,	Vennela Srujan, Pavani Sriram	Pharmaceutics	American Journal of Pharmtech Research	2019
7	Neuroprotective Effect of Psidium Guajava (Guava) Leaf Extracts On Cerebral Ischemic Reperfusion Injury Induced Cognitiveimpairment Rats	P.Goverdhan,	Pharmacology	Indo American Journal of Pharmaceutical Sciences	2019
8	Stability indicating RP-HPLC method	D.Kumaraswamy	Pharmaceutical Analysis	Journal of Scientific	2019

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	development and validation for simultaneous estimation of Isoniazid and Rifampicin in bulk and solid dosage forms			Research in Pharmacy	
9	RP-HPLC method development, validation and stability indicating studies for the estimation of Amitriptyline hydrochloride and Perphenazine in bulk	D.Kumaraswamy	Pharmaceutical Analysis	Journal of Pharma Research	2019
10	Impact of Streptokinase and Tenecteplase on electrocardiogram (ST-segment)and two dimensional-echocardiography (regional wall motion abnormalities) in ST elevated myocardial infarction	Nagesh, Prashanthi Naini , Rashmitha Punzuri , Mamatha Reddy Chandupatla	Pharmacy Practice	International Research journal of pharmacy	2019
11	RP-HPLC method development, Validation and stability indicating studies for the estimation of Amytriptyline hcl and Perphenazine in bulk	K.Praveen	Pharmaceutical Analysis	Journal of Pharma Research	2019

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12	Comparing the efficacy of Phenytoin, Levetiracetam and Sodium Valproate inprevention of post-traumatic seizures in brain injury.International research journal of pharmacy	Thirumala Rao Kancharla , Vinay Ravula , Raja Mohan , Adla Nagesh	Pharmacy Practice	International Research Journal of Pharmacy	2019
13	Study to find the best extraction solvent for use with cucumber peel (cucumis sativus) forhigh neuroprotective activity in cognitive impaired rats	P.Girija	Pharmacology	Journal of scientific research in Pharmacy	2019
14	Formulation and Evaluation of Liquid Nano crystas of Sorafenib Tosylate	T.Nagaraju, Shravan Kumar Y, Neelima P	Pharmaceutics	Global journal of Pharmacy and Pharmaceutical Sciences	2019
15	Neuroprotective Effect of Psidium Guajava (Guava) Leaf Extracts On Cerebral Ischemic Reperfusion Injury Induced Cognitiveimpairment Rats	P.Girija	Pharmacology	Indo American Journal of Pharmaceutical Sciences	2019
16	Evaluation of Nootropic Activity of Spinacia oleracea in Scopolamine Induced Cognitive Decline Mice	Rachana Reddy L, Sharavana Bhava BS,	Pharmacy Practice	Research Journal of Medicinal Plants	2019

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17	Study to find the best extraction solvent for use with cucumber peel (cucumis sativus) forhigh neuroprotective activity in cognitive impaired rats	P.Goverdhan,	Pharmacology	Journal of scientific research in Pharmacy	2019
18	RP-HPLC method development, Validation and stability indicating studies for the estimation of Amytriptyline hcl and Perphenazine in bulk	K. Srinivas reddy,	Pharmaceutical Analysis	Journal of Pharma Research	2019
19	Evaluation of Nootropic Activity of Spinacia oleracea in Scopolamine Induced Cognitive Decline Mice	Venkateshwarlu E.	Pharmacy Practice	Research Journal of Medicinal Plants	2019
20	Stability indicating RP-HPLC Method Development And validation for simultanous estimation of Isoniazid and Rifampicin in bulk and solid dosage forms	K.Praveen Kumar	Pharmaceutical Analysis	Journal of Scientific Research in Pharmacy	2019

International Journal of Pharmaceutical Sciences and Nanotechnology
Volume 12 • Issue 5 • September – October 2019
MS ID: IJPSN-8-10-19-SUNCHU

Research Paper

Formulation and Evaluation of Metoprolol Tartrate Sustained Release Matrix Tablets

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Received August 10, 2019; accepted September 5, 2019

ABSTRACT

The objective of the present work was to develop sustained release matrix tablets of Metoprolol tartrate using different polymers viz. Guar gum, Xanthan gum, Kondagogu gum and HPMC K100M. The release rates were modulated by combination of two different rates controlling material and triple mixture of two different rate controlling materials. After evaluation of physical properties of tablet, the *in-vitro* release study was performed in phosphate buffer pH 6.8 up to 12 hrs. Dissolution data was analyzed for release kinetics. It was observed that matrix tablets contained polymer Xanthan gum was successfully sustained the release of drug up to 12 hrs. Among all the formulations, F6 which contains 45 % of Xanthan gum, release of drug which follows zero order kinetics via, swelling, diffusion and the release profile of formulation F6 was compared with marketed product. The FTIR study revealed that there was no chemical interaction between drug and excipient.

KEYWORDS: Metoprolol; Guar gum; Xanthan gum; Kondagogu gum; Direct compression; Matrix.

Introduction

A controlled release drug delivery system delivers the drug locally or systemically at a predetermined rate for a specific period of time. The goal of such systems is to provide desirable delivery profiles that can achieve therapeutic plasma level. Drug release is dependent on polymer properties, thus the application of these properties can produce well characterized and reproducible dosage forms (Thakur and Thakur, 2015). Controlled release system can be influenced by physiological conditions such as motility, ions, pH and enzymes (Shargel and Yu, 1993). It is the type of tablet that is designed to it releases its contents in first order kinetics or zero order kinetics due to special arrangement and combination of hydrophobic and hydrophilic polymers as an excipient to form a matrix (Gibson, 2009). The primary mechanism of drug release from hydrophilic matrices occurs when the polymer swells on contact with the aqueous medium to form a gel layer on the surface of the system. The drug then releases by dissolution, diffusion, and/or erosion (Thakur and Thakur, 2015).

In the present study, we sought to prepare sustained release matrix tablets of metoprolol tartrate, a β-adrenoceptor blocking agent. Metoprolol tartrate was chosen as a model drug due to its low oral bioavailability, short half-life, water solubility and multiple daily dosing, which makes it an appropriate candidate for a formulation in a sustained release, twice-a-day dosage form. The sustained release dosage form is prepared by using different concentrations of guar gum, Kondagogu gum and xanthan gum in combination with HPMC K100M by using direct compression method and the evaluation was done for prepared tablets.

Materials and Methodology

Drugs and Chemicals

Metoprolol tartrate was gift sample from Merlin Pharma, Guar gum from Lucid Colloids, Mumbai, India. Xanthan gum from Lucid Colloids, Mumbai, India. Kondagogu gum from Nice Chemicals, HPMC from Finar Chemicals Pvt Ltd., Ahmedabad. MCC from Nice Chemicals, Magenesium stearate from Finar Chemicals Pvt Ltd., Ahmedabad. Aerosil from Nice Chemicals, Lactose monohydrate from Lucid Colloids, Mumbai, India. Potassium dihydrogen ortho phosphate from Finar Chemicals Pvt Ltd. Ahmedabad. Sodium hydroxide from Finar Chemicals Pvt Ltd., Ahmedabad, India.

Methodology

Preparation of Metoprolol tartrate matrix tablets

Metaprolol tartrate matrix tablets prepared by direct compression method: Accurately weighed amount of drug, polymer, and diluents were mixed geometrically in a mortar. This mixture was passed through 40 number sieve and thoroughly mixed in a polythene bag for 15 minutes. The powder blend was then lubricated with magnesium stearate and Aerosil for 2 minutes and compressed into tablets on a 16-station rotary tableting machine using 10 mm round, flat-faced punches.

International Journal of Pharmacy and Biological Sciences-IJPBS™ (2019) 9 (3): 659-666
Online ISSN: 2230-7605, Print ISSN: 2321-3272
Research Article | Pharmaceutical Sciences | Open Access | MCI Approved
UGC Approved Journal

Effect of Resveratrol Pre-treatment on the Oral Bioavailability of Buspirone in Male Albino Rabbits

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Received: 10 Mar 2019 / Accepted: 9 Apr 2019 / Published online: 1 Jul 2019
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Abstract

Many drug substances and variety of naturally occurring dietary or herbal components are capable of interaction with the CYP enzyme system. The aim of the study was to investigate the effect of Resveratrol pre-treatment on the bioavailability of buspirone in rabbits. White New Zealand rabbits weighing 2.1±0.13 Kg were selected for study. The bioavailability of buspirone after pre-treatment with resveratrol (5 mg Kg-1 for seven days) was compared with an oral solution (4 mL of 0.25 % w/v BUSP in distilled water). Animals were allowed free access to food and water, until night prior to dosing and were fasted for 10 hrs. In the first phase oral solution (2.5 mg ml^{-1}) was administered through feeding tube followed by rinsing with 10 ml of water. In the second phase, the group was pre-treated with resveratrol for 7 days and study was conducted after 15 days of washout period. The results showed that there was a significant ($p<0.05$) difference in the bioavailability of buspirone after pre-treatment with resveratrol. This increase in bioavailability might be due to inhibition of CYP3A4. Further studies are required to prove this mechanism in humans.

Keywords
Buspirone, Resveratrol, CYP3A4, Bioavailability, Pharmacokinetic.

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INTRODUCTION

Buspirone is the first marketed anxiolytic drug from the azapirone class of compounds [1]. It is as effective as the benzodiazepines for the treatment of anxiety, but buspirone produces fewer adverse side-effects such as sedation, motor impairment, and dependence liability [2]. Unlike benzodiazepine anxiolytics, buspirone has little affinity for the aminobutyric acid benzodiazepine complex. Its primary pharmacological action is believed to be associated with the binding to 5-hydroxytryptamine subtype 1A receptor (5-HT1A) receptor, resulting in the inhibition of the activity of serotonergic neurons through down-regulation [3, 1]. Buspirone, originally

DOI: https://doi.org/10.21276/ijpbs.2019.9.3.84

A REVIEW ON THE DEVELOPMENT AND EVALUATION OF PLANT BASED EMULGEL FORMULATIONS

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ABSTRACT:

Emulgels are the novel drug delivery systems meant for the enhanced and controlled delivery of drugs in general and hydrophobic drugs in specific. Being the unique combination of gels and emulsions, theses possess several merits over conventional dosage forms like creams and ointments like thixotropic, nongreasy, non-adhesive, etc. Several natural drugs from plant origin are reported in the literature for their potential to cure skin diseases but most of them are not formulated into a novel drug delivery systems due to several reasons. If formulated theses are useful to the people, government and industry in the process of eradication of such deadly diseases like Leprosy and Psoriasis. These are safe, effective and also economical in nature. The present review focussed on the recent scientific advances related to the development and evaluation of emulgel formulations with plant- based drugs and related products.

Key words: Emulgel, Natural drugs, Topical, controlled, enhanced drug delivery

1. INTRODUCTION

Emulgels cab be defined as the novel topical drug delivery systems that can be formed by incorporation of gel into the water phase of an emulsion and possess the advantages both as gels and emulsions. Therefore, these are the combination of both gels and emulsions. It is also useful in the formulation of both hydrophilic and hydrophobic drugs for their enhanced and controlled delivery through skin.

Emulgels possess several merits over conventional semisolid dosage forms as these are leading to dual and controlled and enhanced release of drugs from both the phases, thixotropic, greaseless, easily spreadable, easily removable, emollient, non-staining, transparent, pleasing in appearance, suitable in the delivery of both drugs and cosmetics, shows better stability, have grater loading capacities for drugs etc., [1-6].

At present, several drugs which belonging to the categories of non steroidal anti inflammatory drugs, anti microbial agents etc., are successfully formulated and some of which are also marketed as Emulgels[7-8]. Certain natural drugs are also successfully formulated and evaluated as emulgel formulations [9-11].

These are the dosage forms which are prepared by combination of both emulsion and gels. Possess advantages of both to deliver both hydrophilic and hydrophobic drugs in topical drug delivery systems[1-2].

These can be prepared by using aqueous materials like water and alcohol, vegetable oils like, castor oil, emulsifying agents like polyethylene glycol for improving stability, gelling agents like, carbapol 940 for consistency and thickness and skin permeation enhancing agents like oleic acid etc., [3-4].

The formulation of emulgels usually involves the following steps: Preparation of either oil in water or water in oil emulsion, preparation of gelling agent, mixing both under suitable conditions with stirring.

The emulgel obtained above can be evaluated for different parameters like, physical appearance, rheological properties, spreadability, skin irritation test using rats etc., *In-vitro* release study by using Franz diffusion cell, extrudability by tube test, swelling index, PH, stability studies, drug content etc., [5-6].

AMERICAN JOURNAL OF PHARMTECH RESEARCH
Journal home page: http://www.ajptr.com/

Formulation and Evaluation of Montelukast Sodium Lozenges

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ABSTRACT

Montelukast Sodium are formulated as lozenges to provide slow release medicament for the management of chronic asthma and allergic rhinitis. The benefits of prepared lozenges showed increase in bioavailability, reduction in gastric irritation, bypassing of first metabolism and increase in onset of action.The molded lozenges can provide an attractive alternative formulation in allergic conditions. The lozenges are prepared using sucrose, liquid glucose, Hydroxy propyl methyl cellulose K_4M (HPMC K_4M). Sodium Saccharine along with flavors are used to mask the bitter taste of drug. All the formulations prepared are subjected to various physicochemical parameters like weight variation, hardness, thickness, friability, content uniformity, and moisture content etc. The prepared formulations have a hardness of 8-11 kg/cm^2, non-gritty and pleasant mouth feel. Some selected formulations are also tested for drug excipient interactions subjecting to IR Spectral analysis, *In vitro* release rate studies showed that the drug release for lozenges was maximum in formulation F6 (99.3±0.52%) at 30 minutes.

Keywords: Montelukast Sodium, Hard Candy Lozenges, Asthma, HPMC.

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Received 22 February 2018, Accepted 18 March 2019

Please cite this article as: Srujan V *et al.*, Formulation and Evaluation of Montelukast Sodium Lozenges . American Journal of PharmTech Research 2019.

World Inventia Publishers

Journal of Scientific Research in Pharmacy

http://www.jsrponline.com/

Vol. 8, Issue 1, 2019 ISSN: 2277-9469 USA CODEN: JSRPCJ

Research Article

STABILITY INDICATING RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR SIMULTANEOUS ESTIMATION OF ISONIAZID AND RIFAMPICIN IN BULK AND SOLID DOSAGE FORMS

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Received on: 11-12-2018; Revised and Accepted on: 23-01-2019

ABSTRACT

A simple, fast, precise, accurate, robust, economic and stability-indicating reversed phase high performance liquid chromatographic method was developed for the simultaneous estimation of Rifampicin and Isoniazid, using a Hypercil C18 column and a mobile phase composed of Acetonitrile:water 80:20 (v/v). Flow rate was 0.8 mL/min and UV detection wavelength at 303nm. The retention times of Rifampicin and Isoniazid were found to be 2.7 min and 3.3 min respectively. Linearity was established for both Rifampicin and Isoniazid in the range of 10-50 µg/ml respectively. % RSD of Rifampicin and Isoniazid were 1.18 and 1.34 respectively. The correlation co-efficient (r_2) of regression was found to be 0.998 and 0.996 for Rifampicin and Isoniazid respectively. The percentage recoveries of Rifampicin and Isoniazid were found to be in the range of 100% and 99.98-100.1% respectively. Both the drugs were subjected to acid, alkali, oxidation and thermal degradation. The degradation studies indicated, both Rifampicin and Isoniazid bulk were degraded under acid, alkali and oxidative stress in only one day. For tablet dosage form of Rifampicin and Isoniazid degraded under acid, alkali stress in only one day as bulk and degraded under oxidation stress in three days. No degradation of both individual Rifampicin and Isoniazid in bulk was observed in Thermal condition (dry heat at 60°C). So this method can be successfully employed for analysis of drug and degradation products in stability samples in industry and simultaneous quantitative analysis of Rifampicin and Isoniazid in bulk drugs and formulations.

KEYWORDS: *Rifampicin, Isoniazid, Method development, Validation, RP-HPLC, Stress Conditions, Stability Indicating Method, Simultaneous Estimation Method.*

INTRODUCTION

Tuberculosis is an infectious disease that usually affects the lungs. Compared with other diseases caused by a single infectious agent, tuberculosis is the second biggest killer, globally. TB is a chronic granulomatous disease. About $1/3_{rd}$ of the world population is infected with *Mycobacterium tuberculosis* and it is major health problem in developing countries.

Isoniazid is a mild mono amine oxidase inhibitor. Chemically Pyridine-4-carbohydrazide. It is a prodrug activated by the mycobacterial catalase-peroxidase to an active compound which inhibits the synthesis of mycolic acid, an important constituent of the mycobacterial cell wall. Isoniazid is

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DOI: https://doi.org/10.5281/zenodo.2557216

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Journal of Pharma Research

http://www.jprinfo.com/

Vol. 8, Issue 1, 2019 ISSN: 2319-5622 USA CODEN: JPROK3

Research Article

RP-HPLC METHOD DEVELOPMENT, VALIDATION AND STABILITY INDICATING STUDIES FOR THE ESTIMATION OF AMITRIPTYLINE HYDROCHLORIDE AND PERPHENAZINE IN BULK

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Received on: 14-12-2018; Revised and Accepted on: 21-01-2019

ABSTRACT

A new, simple, precise, accurate and reproducible RP-HPLC method was validated for the estimation of Amitriptyline Hydrochloride (AMT) and Perphenazine (PRP) & Stability indicating Studies were performed. Separation of Amitriptyline Hydrochloride and Perphenazine was successfully achieved on Hypersil ODS (250x4.6mm) 5µm column in an isocratic mode utilizing Methanol:Water (90:10) at a flow rate of 1.0 ml/min and eluents were monitored at 247 nm with a retention time of 4.235 and 3.490 minutes for and Amitriptyline Hydrochloride and Perphenazine respectively. The method was validated and it was found to be linear and the range is 10-100µg/ml for both drugs. The values of the correlation coefficient were found to 0.9995 for Amitriptyline Hydrochloride and 0.9912 for Perphenazine respectively. The LOD for Amitriptyline Hydrochloride and Perphenazine were found to be 0.23µg/ml and 0.39µg/ml. The LOQ for Amitriptyline Hydrochloride and Perphenazine were found to be 0.72µg/mL and 1.18µg/mL respectively. The mean recoveries obtained were 102.3% and 100% of Amitriptyline Hydrochloride and Perphenazine, which indicates accuracy of the proposed method. Forced degradation of Amitriptyline Hydrochloride and Perphenazine in various conditions like alkaline, acidic, oxidative and thermal degradation was performed in this investigation. The content of degradation of the drugs was quantitatively analyzed by HPLC. The Amitriptyline Hydrochloride is very sensitive drug it was degraded in all conditions while Perphenazine is more stable in alkaline, acidic, and oxidative than thermal conditions. Proposed method was validated for precision, accuracy, linearity & range and robostness according to ICH guidelines. The method was successfully applied to Perphenazine and Amitriptyline Hydrochloride estimation in bulk.

KEYWORDS: *Amitriptyline HCl, Perphenazine, Hypersil C_{18}, Forced degradation, ICH guidlines.*

INTRODUCTION

Amitriptyline hydrochloride (AMT) belongs to the class of tricyclic antidepressants and its IUPAC name is 3-(10, 11-Dihydro-5H-dibenzo [a, d] cycloheptane-5-ylidine)-N, N-

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DOI: https://doi.org/10.5281/zenodo.2555311

INTERNATIONAL RESEARCH JOURNAL OF PHARMACY
www.irjponline.com
ISSN 2230 – 8407

Research Article

IMPACT OF STREPTOKINASE AND TENECTEPLASE ON ELECTROCARDIOGRAM (ST-SEGMENT) AND TWO DIMENSIONAL-ECHOCARDIOGRAPHY (REGIONAL WALL MOTION ABNORMALITIES) IN ST ELEVATED MYOCARDIAL INFARCTION

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Article Received on: 11/12/18 Approved for publication: 19/01/19

DOI: 10.7897/2230-8407.100395

ABSTRACT

Background: One of the most striving problem among coronary artery disease is ST elevated myocardial infarction. It is the infarction in which entire wall of coronary artery gets occluded and is associated with ST segment elevation (>2mm in atleast 2 chest leads or >1mm in precordial leads or limb leads) on ECG. The impact of Streptokinase and Tenecteplase on ECG and 2D-echo in patients with ST elevated myocardial infarction and the effect of timing of thrombolytic therapy were compared. Material and methods: Patients presented with chest pain within 12 hours diagnosed with st elevated myocardial infarction and received thrombolytic therapy is included in our study. Results: 40 patients were recruited for our study. 20 patients were excluded because of their advice to higher centres due to their critical condition and not available for follow up. ST elevated myocardial infarction patients who were taking streptokinase 1.5 million units and tenecteplase 40 mg completed the study. Among 20 patients 13 (65%) patients treated with streptokinase and 7 (35%) patients treated with tenecteplase. After 30 days follow up 2D echo reveals regional wall motion abnormalities in 10 patients of Streptokinase group and 2 patients of Tenecteplase group. Regional wall motion abnormalities was absent in 3 patients of Streptokinase group and 5 patients of Tenecteplase group. Conclusion: From this study we demonstrate that tenecteplase was more efficacious than streptokinase in terms of ECG readings (ST resolution), 2D-echo. Patients who were presented within 6 hours have benefited more.

Keywords: Tenecteplase, Streptokinase, ST segment, regional wall motion abnormalities, time of presentation.

INTRODUCTION

ST elevation myocardial infarction is one of the challenging problems among the acute coronary syndromes. In a year about 3 million STEMI cases are predicted to occur in India. STEMI management protocols was first done in India in the year 2011. Cardiovascular disease is one of major cause of death in India which has been projected between 1990 and 2020 and it has been accounted approximately 21% of deaths in 2010, of which almost 10% of deaths are due to coronary artery disease. More over in our study it is estimated that NSTEMI is more than STEMI[1].

STEMI is a type of acute coronary syndrome with symptoms characteristic of chest pain, shortness of breath, sweating and associated with ST segment elevation in the ECG. It is defined universal definition of myocardial infarction as new ST segment elevation at J point of at least two of >2mm of chest leads or > 1mm in any other contiguous precordial leads or limb leads[2].

12 lead ECG is important diagnostic tool because it plays an important role in decision pathway for STEMI management. Serum cardiac biomarkers are obtained to differentiate unstable angina from NSTEMI and also to assess the extent of severity of STEMI[3]. Troponin elevation is more specific and sensitive than myoglobin and creatinine kinase in myocardial infarction[4]. Typical pattern of rise and fall of CKMB are seen only in MI. Elevated levels of CKMB is also seen in other conditions but this typical pattern of rise and fall cannot be demonstrated. CKMB is first elevated in first 3-12 hours after onset of chest pain, peaks in 24 hours and returns to baseline in 48-72 hours[5].

It is class I recommended by AHA enhance of trained echocardiogram technicians to investigate regional wall motion abnormalities. The goal is to identify patients with RWMAs likely representing a significant occult coronary artery occlusion which is not evident by symptoms, ecg or initial cardiac biomarkers[6]. Apart of STEMI, ST segment elevation is also seen in other conditions like ventricular aneurysm, pericarditis, benign early repolarisation, hypothermia, hyperkalemia, hypercalcemia, LBBB and RBBB with associated repolarisation but with different patterns so carefully diagnosis should be made[7]. The treatment for STEMI includes revascularization and medical therapy.

Reperfusion strategies include pharmacologic reperfusion which is done by fibrinolytic therapy and mechanical reperfusion which is done by primary percutaneous coronary intervention. Fibrinolytic therapy remains viable option for reperfusion therapy due to limited availability of primary PCI. The most commonly used fibrinolytic agents are streptokinase, tenecteplase, reteplase, alteplase. Streptokinase is a single chain polypeptide derived from β-haemolytic streptococcus, it is antigenic in nature.

Most commonly prescribed dose of streptokinase is 1.5 million international units over 60minutes.Aspirin (325mg/day) should also be taken with streptokinase. High doses are necessary to neutralize the plasma levels of anti-streptococcal antibodies.

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JPR INFO

Journal of Pharma Research

http://www.jprinfo.com/

Vol. 8, Issue 1, 2019 ISSN: 2319-5622 USA CODEN: JPROK3

Research Article

RP-HPLC METHOD DEVELOPMENT, VALIDATION AND STABILITY INDICATING STUDIES FOR THE ESTIMATION OF AMITRIPTYLINE HYDROCHLORIDE AND PERPHENAZINE IN BULK

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Received on: 14-12-2018; Revised and Accepted on: 21-01-2019

ABSTRACT

A new, simple, precise, accurate and reproducible RP-HPLC method was validated for the estimation of Amitriptyline Hydrochloride (AMT) and Perphenazine (PRP) & Stability indicating Studies were performed. Separation of Amitriptyline Hydrochloride and Perphenazine was successfully achieved on Hypersil ODS (250x4.6mm) 5µm column in an isocratic mode utilizing Methanol:Water (90:10) at a flow rate of 1.0 ml/min and eluents were monitored at 247 nm with a retention time of 4.235 and 3.490 minutes for and Amitriptyline Hydrochloride and Perphenazine respectively. The method was validated and it was found to be linear and the range is 10-100µg/ml for both drugs. The values of the correlation coefficient were found to 0.9995 for Amitriptyline Hydrochloride and 0.9912 for Perphenazine respectively. The LOD for Amitriptyline Hydrochloride and Perphenazine were found to be 0.23µg/ml and 0.39µg/ml. The LOQ for Amitriptyline Hydrochloride and Perphenazine were found to be 0.72µg/mL and 1.18µg/mL respectively. The mean recoveries obtained were 102.3% and 100% of Amitriptyline Hydrochloride and Perphenazine, which indicates accuracy of the proposed method. Forced degradation of Amitriptyline Hydrochloride and Perphenazine in various conditions like alkaline, acidic, oxidative and thermal degradation was performed in this investigation. The content of degradation of the drugs was quantitatively analyzed by HPLC. The Amitriptyline Hydrochloride is very sensitive drug it was degraded in all conditions while Perphenazine is more stable in alkaline, acidic, and oxidative than thermal conditions. Proposed method was validated for precision, accuracy, linearity & range and robostness according to ICH guidelines. The method was successfully applied to Perphenazine and Amitriptyline Hydrochloride estimation in bulk.

KEYWORDS: *Amitriptyline HCl, Perphenazine, Hypersil C_{18}, Forced degradation, ICH guidlines.*

INTRODUCTION

Amitriptyline hydrochloride (AMT) belongs to the class of tricyclic antidepressants and its IUPAC name is 3-(10, 11-Dihydro-5H-dibenzo [a, d] cycloheptane-5-ylidine)-N, N-

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DOI: https://doi.org/10.5281/zenodo.2555311

INTERNATIONAL RESEARCH JOURNAL OF PHARMACY
www.irjponline.com
ISSN 2230 – 8407

Research Article

COMPARING THE EFFICACY OF PHENYTOIN, LEVETIRACETAM AND SODIUM VALPROATE IN PREVENTION OF POST-TRAUMATIC SEIZURES IN BRAIN INJURY

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Article Received on: 23/01/19 Approved for publication: 02/03/19

DOI: 10.7897/2230-8407.1004142

ABSTRACT

Background: Traumatic brain injury is said to be a variation of brain function or other corroboration of brain pathology, which are caused by the outward jolts, penetration or expeditious brain movements within the skull which results in mental state alteration. There is evidence that use of anti-epileptics as a prophylaxis have been found to be variable efficacy against post-traumatic seizures. In patients who are diagnosed with moderate to severe traumatic brain injury (TBI) the efficacy of Phenytoin, Levetiracetam and Sodium valproate regarding the post-traumatic seizures were compared to appraise their effectiveness's. Material and methods: Males and females of 17-80 years diagnosed with moderate to severe traumatic brain injury were included in our study. Results: There was a significant reduction in early and late post-traumatic seizures in patients treated with Phenytoin and Levetiracetam than those treated with Sodium valproate.Conclusion: From this study we concluded that the efficacy of Levetiracetam was relatively similar to Phenytoin in preventing early and late post-traumatic seizures, whereas Sodium valproate showed poor efficacy.

Key words: Post-traumatic seizures (PTS), Traumatic brain injury (TBI), early post-traumatic seizures (ePTS), Phenytoin, Levetiracetam, Sodium valproate.

INTRODUCTION

Traumatic brain injury is contemplated to be a utmost health problem, particularly in urban trauma centres with a generic difficulty in emergency properties.[1,2] Its consequential complications such as changes affecting the language, thinking , emotions or sensation, which may not be easily evident and lack of knowledge among the public, therefore it is cited as 'silent epidemic'.[3] A seizure is the' physical response to abnormal electrical activity in the brain'. [4]Post traumatic seizures have been used to describe the seizure occurrence after head trauma and they are believed to be incidentally related to the trauma itself.[5]They are arise from the traumatic brain injury and brain harm caused by physical trauma.[6] Generally post-traumatic seizures are classified into three categories based on the seizure occurrence after the brain injury as-'immediate seizures',' early seizures', and' late seizures'. Immediate seizures refers to those which occurs at or minute after the thwack; early seizures are those that occurs within a week of the brain injury whereas as those that occurs after the week of the brain injury are called as late seizures.[7,8,9] The actual therapy for TBI patients depends on the particular injuries that the patient has succoured, well timed diagnosis, imaging results and clinical data.[1,10] In a study performed for identifying the brain injury associated with development of seizures in particular species: it has shown that the enhanced risk of seizures after TBI generally depends on the injury severity and time from its occurrence.[11] An age of 65 or older, a skull fracture, brain bruise with subdural hematoma, and consciousness deficient or amnesia (more than one day) are considered to be a vital risk factors for the later seizures.[11,12,13] The time course of the risk and the risk factors are considered to be a notable factors for designing the seizure prophylaxis studies.[14] The outcomes of patients with TBI varies according to the age; in a study conducted by Aisekainen et al expressed that children are more susceptible to early seizures, whereas adolescents and adults are more prone to late seizures.[15,16] Antiepileptic's have been used for many years to prevent the development of posttraumatic seizures. The prophylactical use of the phenytoin was effective, which was proposed by early retrospective studies.[17,18,19] Nevertheless , succeeding prospective, double blind trials of treatment with phenytoin and lower doses other antiepileptic's like phenobarbital failed to show that such treatment had more benefit than placebo.[20,21,22,23] Levetiracetam has shown to have similar efficacy in preventing the seizures after the traumatic brain injury which was proposed by a study conducted by Syed Nabeel Zafar et al. However there is a limited evidence regarding this statement, further studies need to be conducted.[24] Sodium valproate has less side effects and it has been recommended to the traumatic brain injury patients. There is evidence from the clinical trials that it has no effect on reduction of late posttraumatic seizures. It has been suggested that the early posttraumatic seizures progression can be prevented by the Sodium valproate administration.[25]

MATERIAL AND METHODS

It is a prospective, comparative and observational study conducted in patients from Mahatma Gandhi Memorial hospital, Warangal. Patients were explained about the study and informed consent forms were obtained by explaining them in their local

Global Journal of
Pharmacy & Pharmaceutical Sciences
ISSN: 2573-2250

Juniper Publishers
key to the Researchers

Research Article
Volume 7 Issue 5 - October 2019
DOI: 10.19080/GJPPS.2019.07.555721

Glob J Pharmaceu Sci

Formulation and Evaluation of Liquid Nanocrystals of Sorafenib Tosylate

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Submission: August 18, 2019; **Published:** October 03, 2019

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Abstract

The liquid crystalline state has both the properties of liquid and solid. The liquid state is found to associate with flow property whereas the solid state has structural properties of crystallinity in aspects of orientation and position. Liquid crystalline phases represent intermediate states and are also called as mesophases.

The studies were done with different formulations to ensure its controlled drug release and bioavailability.

Context: Nanoparticles helps in site specific targeting which aids in controlled release of the incorporated drugs. Site specific targeting can be achieved by attaching targeting ligands to surface of particles with the help of magnetic field influence.

Aim and objective: To ensure that nanoparticles will provide control release of the drug which are used as drug carriers for lipophilic molecules there by which it enhances the solubility and bioavailability of poorly water-soluble drug by reducing their doses regimen as a drug delivery system.

Methods and material: Simple emulsification followed by high pressure homogenisation

Results: FTIR Studies, Characterization of particle size, entrapment efficiency and total drug content.

Conclusions: Liquid crystal nanoparticles provide controlled release of the drug and these systems are used as drug carriers for lipophilic drugs, to enhance the solubility and bioavailability of poorly water-soluble drugs and to reduce the doses regimen through nanoparticles, as a drug delivery system.

Keywords: Nanocrystals; Targeted Delivery; Bioavailability; High Pressure Homogenization; Scanning Electron Microscope; Ultrasonication; Poloxamer 407 And Glycerol Mono Oleate

Introduction

Nanoparticles are defined as particulate dispersion or solid particles with size in range of 10-1000 nm. Polymeric nanoparticles are made from non-biodegradable and biodegradable polymers. Sorafenib is a potent anticancer agent for the treatment of hepatocellular carcinoma. It exists in crystalline as well as amorphous form, of these later exhibits higher bioavailability owing to improved solubility [1-3]. Solubility can be improved by mechanisms like co-solvency, complexation, chemical modification, hydrotropy, size reduction and changing crystal morphism etc. To compare the surface area of different materials quantitatively, the term specific surface area is used. This is defined as the surface area per unit weight or volume of material. As surface area increases, solubility increases [4].

Methodology

Pre-formulation studies

The goals of pre-formulation studies were meant to select a suitable drug substance, evaluate its physical and chemical properties and understand the material's stability under the conditions that will enforce the development of a drug delivery system. It Establishes compatibility with excipients and enhances physico-chemical properties and determines its kinetic release rate profile [5-9].

Formulation and development

Materials

Sorafenib tosylate, Glycerol mono oleate, and Poloxamer 407.

World Inventia Publishers

JPR INFO

Journal of Pharma Research

http://www.jprinfo.com/

Vol. 8, Issue 1, 2019 ISSN: 2319-5622 USA CODEN: JPROK3

Research Article

RP-HPLC METHOD DEVELOPMENT, VALIDATION AND STABILITY INDICATING STUDIES FOR THE ESTIMATION OF AMITRIPTYLINE HYDROCHLORIDE AND PERPHENAZINE IN BULK

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DOI: https://doi.org/10.5281/zenodo.2555311

OPEN ACCESS

Research Journal of Medicinal Plants

ISSN 1819-3455
DOI: 10.3923/rjmp.2019.155.161

Research Article

Evaluation of Nootropic Activity of *Spinacia oleracea* in Scopolamine Induced Cognitive Decline Mice

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Abstract

Background and Objective: Alzheimer disease (AD) is reflected by progressive cognitive debility usually start with impairment in the capability to form new memories, but unavoidably disturbing all knowledgeable tasks. The present study was aimed at investigating the neuroprotective effect aqueous extract of *Spinacia oleracea* (AESO) in scopolamine induced cognitive decline mice. **Materials and Methods:** Memory impairment was produced by administration of Scopolamine (1.4 mg kg^{-1} i.p.) in albino mice. Nootropic activity in mice with the treatment of AESO (200 - 400 mg kg^{-1}) and donepezil (5 mg kg^{-1}) were administered to different groups of mice. Effect of extract on learning and memory of mice was evaluated using elevated rectangular maze, pole climbing and morris water maze test and also estimated the brain acetylcholinesterase (AChE) concentration and the percentage of inhibition of AChE. **Results:** AESO showed significantly improved in learning and memory of mice, as indicated by the decline in transfer latency using rectangular maze test, decrease in escape latency during training, retrieval using morris water maze, pole climbing test and neuroprotective activity through reduced brain AChE concentration and increased the percentage of inhibition of AChE activity in rat brain. **Conclusion:** Thus aqueous extract of *Spinacia oleracea* showed memory enhancing and neuroprotective activity in mice probably by inhibiting brain AChE activity.

Keywords: Nootropic, acetylcholinesterase, donepezil, *Spinacia oleracea*, scopolamine, neuroprotective

Citation: Lakkireddy Rachana Reddy, Kulandaivelu Umasankar, Bandaru Sheshagiri Sharavana Bhava and Eggadi Venkateshwarlu, 2019. Evaluation of nootropic activity of *Spinacia oleracea* in scopolamine induced cognitive decline mice. Res. J. Med. Plants, 13: 155-161

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

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OPEN ACCESS

Research Journal of Medicinal Plants

ISSN 1819-3455
DOI: 10.3923/rjmp.2019.155.161

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World Inventia Publishers

Journal of Scientific Research in Pharmacy

http://www.jsrponline.com/

Vol. 8, Issue 1, 2019 ISSN: 2277-9469 USA CODEN: JSRPCJ

Research Article

STABILITY INDICATING RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR SIMULTANEOUS ESTIMATION OF ISONIAZID AND RIFAMPICIN IN BULK AND SOLID DOSAGE FORMS

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Received on: 11-12-2018; Revised and Accepted on: 23-01-2019

ABSTRACT

A simple, fast, precise, accurate, robust, economic and stability-indicating reversed phase high performance liquid chromatographic method was developed for the simultaneous estimation of Rifampicin and Isoniazid, using a Hypercil C18 column and a mobile phase composed of Acetonitrile:water 80:20 (v/v). Flow rate was 0.8 mL/min and UV detection wavelength at 303nm. The retention times of Rifampicin and Isoniazid were found to be 2.7 min and 3.3 min respectively. Linearity was established for both Rifampicin and Isoniazid in the range of 10-50 µg/ml respectively. % RSD of Rifampicin and Isoniazid were 1.18 and 1.34 respectively. The correlation co-efficient (r_2) of regression was found to be 0.998 and 0.996 for Rifampicin and Isoniazid respectively. The percentage recoveries of Rifampicin and Isoniazid were found to be in the range of 100% and 99.98-100.1% respectively. Both the drugs were subjected to acid, alkali, oxidation and thermal degradation. The degradation studies indicated, both Rifampicin and Isoniazid bulk were degraded under acid, alkali and oxidative stress in only one day. For tablet dosage form of Rifampicin and Isoniazid degraded under acid, alkali stress in only one day as bulk and degraded under oxidation stress in three days. No degradation of both individual Rifampicin and Isoniazid in bulk was observed in Thermal condition (dry heat at 60°C). So this method can be successfully employed for analysis of drug and degradation products in stability samples in industry and simultaneous quantitative analysis of Rifampicin and Isoniazid in bulk drugs and formulations.

KEYWORDS: *Rifampicin, Isoniazid, Method development, Validation, RP-HPLC, Stress Conditions, Stability Indicating Method, Simultaneous Estimation Method.*

INTRODUCTION

Tuberculosis is an infectious disease that usually affects the lungs. Compared with other diseases caused by a single infectious agent, tuberculosis is the second biggest killer, globally. TB is a chronic granulomatous disease. About $1/3_{rd}$ of the world population is infected with *Mycobacterium tuberculosis* and it is major health problem in developing countries.

Isoniazid is a mild mono amine oxidase inhibitor. Chemically Pyridine-4-carbohydrazide. It is a prodrug activated by the mycobacterial catalase-peroxidase to an active compound which inhibits the synthesis of mycolic acid, an important constituent of the mycobacterial cell wall. Isoniazid is

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DOI: https://doi.org/10.5281/zenodo.2557216

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