PAPER PUBLICATIONS

2019-20 TO 2015-16

E-ISSN 2250-0944
ISSN 2250-1150
doi: 10.31838/ijprt/10.02.03

Research Article

MULTIPLE ANTICOUNTERFEIT TECHNOLOGIES TO COMBAT COUNTERFEITING IN PHARMA INDUSTRY: AN OVERVIEW

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Received: 04.10.19, Revised: 04.11.19, Accepted: 04.12.19

ABSTRACT
Growths of international free trade and inadequate drug regulation have led to the expansion of trade in counterfeit drugs worldwide. The problems related to safety, quality of medicine and efficacy is to measure concern in today developing scenario in develop and developing countries. This counterfeiting is overcome by technological protection. A variety of technologies came into existence like covert, overt, and track and trace technologies. This review is mainly focus on the ideal technological characteristics, existing anti-counterfeit technologies, and their adoption in different countries. The Indian government is getting sensitized about the extent of the problem and has formulated rules mandating barcodes. This counterfeit medicine can be identified by using various anti-counterfeit packaging techniques such as 2D barcodes, holograms and RFID.

Keywords: Anticounterfeit; RFID; 2D barcodes

INTRODUCTION

Nowadays counterfeiting is growing problem in both develop and developing countries. The increased counterfeiting of pharmaceutical products in recent years has develop into a global healthcare crisis affecting patients the world over. This increased in counterfeiting mostly affect the patients as the therapeutic effect is not achived and also the toxicity is increased. Materials such as cement, gypsum, industrial solvents and lead based road paints have been identified in counterfeit pharmaceuticals[1]. The drugs which contains the counterfeit materials it leads to decreased levels of bioavailability and the development of resistant strains of a disease[2]. In other cases, unrelated pharmaceutical products have been altered or repackaged so they can be passed off as a more profitable product. Common over the counter pain relievers such as aspirin have been used in this way[3]. An additional, to this the most subtle aspect of pharmaceutical counterfeiting involves the use of authentic product, often referred to as illegal diversion. Illegal diversion can occur at any stage within the drug supply chain, from the manufacturer to the individual retailer, and may involve product which is past its expiry date and slated for disposal. This diversion represents challenge for the analysis of the final products for their testing, autthotification of finished products, there physical and chemical identifications. The branding of pharmaceutical products are most important due to their high market share their ease of productions and ample profit margins[4]. The counterfeit is mostly related to product security. This counterfeiting is mostly related to the products which are sidetracked from their distribution channel or expired their shelf life. And this problem is mostly related to their repackaging or modification of products[5,6]. This type of products are mislabeled with respect to their identity, sources. The counterfeiting of medicine is applicable to both branded and generic products According to reports in 2012developing country near about 30% of the medicines sold as a counterfeit, among which 50% are sold online. In USA 75 billion revenue are generated by this type of medicine in2010 and 13% growth is expected in future. The counterfeiting with refence to packaging is not problem in isolation. Duplication i.e., copying labels , packaging , products ,instruction and usage information, substitution, tampering by Counterfeiting with reference to packaging is not a problem in identification ;in packaging they mainly counterfeit the product by duplication it includes labels copying, products packaging, use, and instruction information, counterfeit with respect to substitution it includes substitution, tampering etc.

RESEARCH ARTICLE

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Comparative Antimicrobial Potential of *Tinospora cordifolia* and *Merremia emarginata* against Different Microbial Species

S G Waghmare[1*], S B Kosalge[1], N A Sheikh[1], V R Mandade[1]

Abstract: The aim of present work was to study the comparative antimicrobial activity of extract of *Tinospora cordifolia* (*T. cordifolia*) *Merremia emarginata* (*M. emarginata*) against different microbial species. The physiochemical parameter extractive values of both the drugs are determined for the selection of solvent by using chloroform, ethyl acetate and ethanol by soxhlet extraction. Extract of both individual drugs and combined drugs were prepared. Culture of microbial species of *Salmonella typhi* (*S. typhi*), *Staphylococcus aureus* (*S. aureus*) and *Bacillus subtilis* (*B. subtilis*) were prepared and zone of inhibition were checked by using individual extract of drug and combined extract drug. Both drugs shows antimicrobial activity against different microbial species as well as extract of combined drugs also shows good antimicrobial activity. Combine extract of *T. cordifolia* and *M. emarginata* showed more zone of inhibition against *S. typhi*. The obtained experimental data serve as useful guide for antimicrobial activity of combine effect of *T. cordifolia* and *M. emarginata* against *S. typhi*, *S. aureus* and *B. subtilis*. The combination of extract of two drugs shows optimal antimicrobial activity against *S. typhi*.

INTRODUCTION

Infectious diseases are the world's leading cause of premature deaths, killing almost 50,000 people every day. In recent years drug resistance to human pathogenic bacteria has been commonly reported from all over the world. With the continuous use of antibiotics microorganism have become resistant. In addition to this problem, antibiotic are sometimes associated with adverse effects on host which include hypersensitivity, immunosuppressant and allergic reactions. This has created immense clinical problems in the treatment of infectious diseases. Therefore, there is a need to develop alternative antimicrobial drugs for the treatment of infectious diseases; one approach is to screen local medicinal plants for possible antimicrobial properties. Plant materials remain an important recourse to combat serious diseases in the world. According to WHO (1993), 80% of the world's population is dependent on the traditional medicine and a major part of the traditional therapies involves the use of plant extracts or their active constituents. [1] There is no existence of life without plants. Plants are the essential foundation of medicine. Some important drugs that are still in use today are derived from traditional medicinal herbs. Medicinal plants are common sources of medicine. [2]

The plant *T. cordifolia* commonly named as "Guduchi" in Sanskrit and Giloy belongs to family Menispermaceae. *T. cordifolia* is a genetically diverse, large, deciduous climbing shrub with greenish yellow typical flowers, found at higher altitude. In racemes or racemose panicles, the male flowers are clustered and female are solitary. The flowering season expands over summers and winters. It is indigenous to areas of India, Myanmar, Sri Lanka, China, Thailand, Philippines, Indonesia, Malaysia, Borneo, Vietnam, Bangladesh, North Africa, West Africa and South Africa 7-10. It typically grows in deciduous and dry forests at elevations up to 1000 ft. A variety of active components derived from the plant like alkaloids, steroids, diterpenoid lactones, aliphatic and glycosides have been isolated from the different parts of the plant body, including root, stem and whole plant. Recently, the plant is of great interest to researchers across the globe because of its reported medicinal properties like antidiabetic, antiperiodic, antispasmodic, antiinflammatory, antiarthritic, antioxidant, antiallergic and antianxiety. [3-4]

The Plant *M. emarginata* commonly known as Gofan and Ipomoea reniformis choisy (Convolvulaceae) is a perennial, much branched herb (creeper) the leaves are simple, long-stalked and reniformis or ovate-cordate. The flowers are yellow and auxiliary with 1–3 flowers with very short peduncles and the fruits look similar to sub-globose capsules with 2–4 light brown, glabrous seeds. It is found widely distributed all over the India, especially in damp places in upper gangetic plain, Gujarat, Bihar, West Bengal, Western Ghats, ascending up to 900 m in the hills, Goa, Maharashtra and Karnataka in India, Ceylon and Tropical Africa. Phytochemical studies reported that Merremia or Ipomoea contain biologically active chemicals such as P-coumaric acid, Ferulic, Caffeic, Sinapic acid Esters and Tropane alkaloids. *M. emarginata* whole plant was studied for its antioxidant, antiinflammatory, anticancer, antidiabetic, antipyretic and neuropathy activity. In the indigenous system of Medicine, *M. emarginata* has been claimed to be useful for cough, headache, neuralgia, rheumatism, diuretic, inflammation, troubles of nose and fever due to enlargement of liver and also for treating cancer. [5-6]

MATERIALS AND METHODS

Plant Collection and Authentication

The plants *T. cordifolia* and *M. emarginata* were collected from fields of Chandrapur, Maharashtra, India. The plants were authenticated by Dr. M. B. Shende, Dept. of Botany, Janta Mahavidyalay, Chandrapur and Maharashtra, India (JMV/BOT-01 /2018-19).

Chemicals and Reagents

All chemicals and reagents used for the extraction and investigation of *T. cordifolia* and *M. emarginata* were of analytical grade.

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ISSN:0975-1459
Journal of Pharmaceutical Sciences and Research
www.jpsr.pharmainfo.in

Development and Validation of RP-HPLC Method for Estimation of Vigabatrin Using Derivatization with 9-Fluorenylmethyloxycarbonyl Chloride

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Abstract

A Simple, efficient and reproducible method for the estimation of Vigabatrin (VGB) from bulk and pharmaceutical formulation has been developed using reversed phase high performance liquid chromatography. The method involves derivatization of the primary amine group of VGB with 9-fluorenylmethyloxycarbonyl chloride (FMOC) followed by isocratic separation using a mobile phase consisting of acetonitrile: water (97.5 : 2.5% V/V). Column used was Finpak SIL C_{18} (250 X 4.6 mm internal diameter) 5 µ with flow rate of 1 mL/min. The detection wavelength used was 265 nm. The retention time of VGB-FMOC comples was found to be 3.89 min. Linearity of drug was 5-30 µg/mL. The performance of analysis was studied and the validated method showed excellent performance in terms of selectivity, specificity, sensitivity, precision and accuracy. No interferences were found from excipients and other impurities.

Keywords: Vigabatrin, FMOC, RP-HPLC, Derivatization, Validation

1. INTRODUCTION

Vigabatrin (VGB) (4-amino-hex-5-enoic acid) (Fig. 1) is a Gamma-aminobutyric acid (GABA) transaminase inhibitor used in the treatment of infantile spasm and refractory complex partial seizures. It is used as a first line treatment for infantile spasm and the drug of choice for infantile spasm with tuberous sclerosis complex syndrome [1]. VGB exhibits a very low absorption in the UV/Vis region. Thus, derivatization of the drug is necessary if measurement of VGB is intended by UV/Vis or spectrofluorimetric detection to overcome poor sensitivity [2]. Vigabatrin has been determined in different matrices, including dosage forms and biological samples by gas chromatography (GC) [3-5], high-performance liquid chromatography (HPLC) [6-11], spectrofluorimetry [12-14] and capillary electrophoresis (CE) using derivatization of the drug with fluorescence tags [15,16]. *o*-Phthaldialdehyde (OPA), dansyl chloride and 4-chloro-7-nitrobenzofurazan (NBD-Cl) have been commonly used as derivatizing agents for fluorescence detection [15]. However, these currently available methods have been found to have low detection limits, long run times, complex derivatization procedures and unstable derivatized products. 9-fluorenylmethyloxycarbonyl chloride (FMOC) is one of the reagents which is used for derivatizing amino acids for HPLC analysis [17].

To date, there is no reported analytical technique for estimation of VGB by pre-column derivatization with FMOC in bulk and marketed formulation. In this study FMOC derivatization method was used to increase sensitivity and stability of derivatized product. In present study, a simple, cost effective, highly sensitive and reproducible RP-HPLC method was developed and validated for estimation VGB in bulk and marketed formulation.

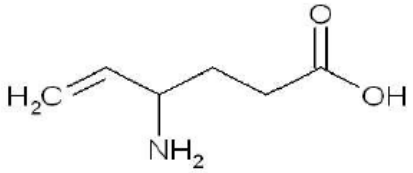

Fig. 1. Structure of Vigabatrin

2. MATERIALS AND METHODS

2.1. Equipments

The chromatographic system (Jasco, LC 2010C HT, Kyoto, Japan) consisted of an Jasco PU 2080 Plus pump and Jasco UV 20705 Plus detector. The separation was performed on Finpak SIL C_{18} T- 5 column (250 mm X 4.6 mm, 5 µm particle size) with a mixture of water-acetonitrile (97.5 : 2.5, v/v) as mobile phase. The mobile phase was filtered through a 0.22 µm pore size membrane filter and degassed before use. The column was maintained at ambient temperature and the flow rate was 1 mL/min in isocratic mode. Injection volume was 10 µL and the UV detection wavelength was set at 265 nm. The digital pH meter (Equiptronics-EQ-614), electronic balance (Contech CA series) and Mdi 0.2 µm membrane were used.

2.2. Materials

Working Standards of pharmaceutical grade VGB was received as a gift sample from Dr. Reddy's Labs Ltd. Hyderabad and FMOC was purchased from Sisco Research Laboratories, Mumbai, India. Oral powder formulation, Sabril (VGB 500 mg/packet) oral powder of Sanofi Aventis was bought from a local pharmacy. All the chemicals and reagents used were of HPLC grade and purchased from Merck, India.

2.3. Solutions

The derivatization reagent consisted of 1.6 g/L FMOC in acetonitrile. Borate buffer solution was prepared by

European Journal of Biomedical and Pharmaceutical Sciences

SJIF Impact Factor: 4.918 (EJBPS) ISSN 2349-8870

Date: 02/01/2019

CERTIFICATE FROM EDITOR

It is hereby certified that Article entitled **"NEEM EXTRACT: A POTENTIAL HERBAL REMEDY FOR TREATING HIV"** Manuscript No. EJBPS/4595/4/2017, Author name: ***Pallavi K. Urade and Snehal V. Pimpalshende,** received for publication in *European Journal of Biomedical and Pharmaceutical Sciences (EJBPS)*, (ISSN No: 2349-8870) and has been published (Volume 6, Issue 1.) after getting reviewed by three reviewers.

EJBPS is **Indexed in** Index Copernicus, Google Scholar., Indian Science Publications., Ulrich's Periodicals Directory (In Process), Research Bible, Fuchu, JAPAN., International Society for Research Activity (ISRA), Scientific Indexing Service (SIS), UDLedge Science Citation Index, International Scientific Indexing (ISI) (Under Process), InfoBase Index (Under Process), Polish Scholarly Bibliography, Global Impact Factor (Under Process), SJIF Impact Factor, Scholar Article Impact Factor (SAIF), CAS (A Division of American Chemical Society) USA, Directory of Open Access Journal (DOAJ, Sweden, in process), CiteFactor, Directory Of Research Journal Indexing (DRJI), Indian citation Index (ICI), Journal Index (JI, Under Process), Directory of abstract indexing for Journals (DAIJ), Open Access Journals (Under Process), Cosmos Impact Factor, Impact Factor Services For International Journals (IFSIJ: 4.918), Jour Informatics (Under Process).

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Dr. Valentina Petkova
EJBPS

WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
SJIF Impact Factor 7.421
Volume 7, Issue 12, 714-742 Research Article ISSN 2278 – 4357

EVALUATION OF ANTIULCER ACTIVITY OF ASPARAGUS RACEMOSUS ON EXPERIMENTAL ANIMALS

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Article Received on
24 Sept. 2018,
Revised on 15 October 2018,
Accepted on 04 Nov. 2018
DOI: 10.20959/wjpps201812-12730

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ABSTRACT

In present, peptic ulcer is a worldwide problem and its prevalence is quite high in India. Some present data shows that in different part of India its occurrence is 4 to 10% per thousand populations. The exact etiology of peptic ulcer is not known, the disease results in chronic suffering, loss of working hours and occasional fatality. The life time prevalence of peptic ulcer disease (PUD) in United States is approximately 12% in men and 10% in women. In USA, approximately 4 million individuals have peptic ulcers, while each year about 350,000 new cases are diagnosed; about 100,000 patients are hospitalized and at least about 3000 people die as a result of the disease. Smoking habit, alcoholism, stress & spicy food make the severity of the disease which leads serious complication of ulcer. Asparagus Racemosus is one of the most commonly use in different medical conditions has been documented. Traditionally, Asparagus Racemosus are beneficial in the treatment of diseases related to lungs & airways, blood, skin, stomach, intestines, and liver. As no reports are available on the possible antiulcer effects of Asparagus Racemosus. The present work was carried out to antiulcer activity of Asparagus Racemosus by ethanol induced gastric ulcers in wister albino Test drug Asparagus Racemosus (low dose) and Asparagus Racemosus (high dose) have

IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS)
e-ISSN:2278-3008, p-ISSN:2319-7676. Volume 13, Issue 3 Ver. I (May. – June. 2018), PP 57-64
www.iosrjournals.org

Waste Water Treatment: Design and Develop Waste Water Disposal Method for Pharmaceutics Laboratory

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Abstract: *Waste water is any water that has been adversely affected in quality by anthropogenic influence. Many pharmaceutical industries is responsible to generates toxic effluent. The waste water generated from these industries possess solids, biodegradable and nonbiodegradable organic compounds. Pharmaceutical compounds typically produced in batch process leading to the presence of a wide variety of products in waste water which are generated in different operations. Various sources of pharmaceutical industries are different sectors of Active pharmaceutical ingredients (API), bulk drugs, and formulation department. Pharmaceutical residues and/or metabolites are usually detected in the environment at trace levels but even that low concentration levels but can induce toxic effects. Pharmaceutical waste water if disposed with insufficient treatment may leads to great damage to the environment and ground resources. Need of waste water treatment is to remove organic and inorganic matter this would otherwise cause pollution, to remove pathogenic disease-causing organism, in order to protect the environment and human health. The treatment of waste water is divided into three parts physical, biological and chemical. Waste water treatment process may reduce suspended solids, biodegradable organics, and pathogenic bacteria. Sand filtration, followed by chemical treatment is a proven procedure to treat the the pharmaceutical waste water for disposal as well as reuse. Method develop to treat the collected laboratory waste water. Various materials were used to treat this collected pharmaceutics laboratory waste water. With the help of various parameters pharmaceutical waste water were evaluated, parameters use for the evaluation of pharmaceutical waste water are Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Total dissolved solids (TDS), Total suspended solids (TSS), colour, Turbidity, Microbial analysis.*

Keywords- *Waste water, Biochemical oxygen demand, Total dissolved solids.*

Date of Submission: 25-04-2018 Date of acceptance: 14-05-2018

I. Introduction

Water, pre-requisite for life and key resource of humanity is in abundance on earth. Water that exists on the Earth surface is present as a water of oceans, lakes, rivers and glaciers. [1]Although India occupies only 3.29 million km^2 geographical area which forms 2.4% of the worlds land area, it supports over 15% of world's population with only 4% of the world's water resources. Waste water is full of contaminant including bacteria, chemicals and other toxins. Its treatment aims at reducing the contaminants to acceptable levels to make the water safe for discharge back into the environment [2]

Need to remove organic and inorganic matter this would otherwise cause pollution.

To remove pathogenic (disease causing) organisms.In order to protect:

The environment

Human health [3]

Water pollution is of widespread national concern. Industrial activities generate a large number and variety of waste products. The nature of industrial waste depends upon the industrial processes in which they originate. The problem of adequately handling industrial waste waters is more complex and much more difficult because industrial waste water vary in nature from relatively clean rinse waters to waste liquors than are heavily laden with organic or mineral matter or with corrosive, poisonous, inflammable or explosive substances. As a result of rapid industrial growth following World War II, the amount of waste material generated by industries has increased manifold and the treatment/removal of these contaminants from the natural resources such as air and water in which they are released has progressed into a special science, involving chemical, mechanical and biological processes. The impure water containing inorganic salts, organic compounds, microbial contamination and turbidity disturbing the natural hydrologic cycle (water cycle). The hydrologic cycle can be maintained by the removal of toxic chemicals by many scientifically simple yet sometimes technologically very complex methods. [4]

RESEARCH ARTICLE

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Phyto-Physicochemical and HPTLC Investigation of Leaves of *Epilobium hirsutum* Linn.

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Abstract: *Epilobium hirsutum* Linn. belongs to family Onagraceae, commonly known as great willowherb. *E. hirsutum* widely used as traditional medicine. Despite its popular medicinal utilization, there were no definite phyto-physicochemical data of *E. hirsutum* has been reported so far for its pharmacognostical standardization. Thus, the research study was designed to investigate the phyto-physicochemical aspects of *E. hirsutum*. The various physicochemical parameters like ash values, extractive values, volatile oil content, moisture content and fluorescence analysis of *E. hirsutum* were determined for ascertaining the quality of the crude drug. The preliminary qualitative, as well as quantitative phytochemical analysis and high performance thin layer chromatography (HPTLC) of *E. hirsutum*, were carried out. The various physicochemical parameters of *E. hirsutum* were ascertained. The phytochemical analysis reveals the presence of carbohydrates, sugar, sterols, triterpenoids, anthraquinone glycosides, saponin glycoside, flavonoids, tannins and phenolic compounds in various extracts of *E. hirsutum*. The methanolic and aqueous extracts of leaves of *E. hirsutum* contained a high amount of total phenols and flavonoids as compared to the stem. The HPTLC fingerprinting of various phytochemical in methanol and aqueous extract of *E. hirsutum* were reported. The present finding can provide useful information regarding establishing pharmacognostic standards for identification, assessing purity, standardization and preparation of monograph of *E. hirsutum*.

INTRODUCTION

Epilobium hirsutum Linn. is a flowering plant belongs Onagraceae family, commonly known as great willowherb and great hairy willowherb or hairy willowherb. [1] The distribution of *E. hirsutum* includes Mediterranean region, Europe, Asia, Africa and India particularly in Jammu and Kashmir. The plant is distributed to western Himalaya at very high altitude (7,000 ft.). [2-3] The frequent territory includes marshland, ditches and banks of rivers and streams. It was reported that *E. hirsutum* have antinociceptive, [4] anti-inflammatory, [5] iron chelating and antioxidant activity. [6] *E. hirsutum* is also used as an antimicrobial, antitumor and in the treatment of enlarged prostate, prostatitis, cystitis, burning feeling when urinating and burning feeling after prostate operation. [7] Besides its well accepted medicinal uses, no conclusive data is available regarding its phyto-physicochemical properties. Hence, the present study was designed to focus on the investigation of phyto-physicochemical properties of *E. hirsutum*.

MATERIALS AND METHODS

Plant Collection and Authentication

The plant *E. hirsutum* was collected in the flowering stage from the fields of Chatterhama, Hazratbal, Srinagar, Jammu and Kashmir, India during August 2013. It was authenticated by Curator, Centre for Biodiversity and Taxonomy, Department of Botany, University of Kashmir, Jammu and Kashmir, India (1914-KASH).

Instruments

The UV-Visible spectrophotometer, model UV-1800, Shimadzu, Japan and HPTLC, Camag, Muttenz, Switzerland were used for the study.

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Chemicals and Reagents

Quercetin and Gallic Acid were purchased from Sigma-Aldrich, St. Louis, MO, USA. All the other chemicals and reagents were purchased from Merck, Kenilworth, New Jersey, USA. All the chemicals and reagents were of analytical grade.

Physicochemical Analysis

The various physicochemical parameters of the powdered *E. hirsutum* such as ash value, extractive value, volatile oil content and loss on drying were performed. [8]

Fluorescence Analysis

The fluorescence characteristics of powdered *E. hirsutum* with different chemicals were observed in daylight, short light (254 nm) and ultraviolet long (365 nm). The powdered *E. hirsutum* was treated with the various neutral solvents (methanol and water), acidic (1 N hydrochloric acid, 50% hydrochloric acid, 50% sulfuric acid and 50% nitric acid) and alkaline solvents (1 N sodium hydroxide and alcoholic 1 N sodium hydroxide). The various extracts of *E. hirsutum* were also subjected to daylight, short light (254 nm) and ultraviolet long (365 nm) for determination of its fluorescence characteristics. [9]

Preparation of Extracts

The leaves of *E. hirsutum* were shade dried and powdered coarsely. The powdered material was successively extracted with petroleum ether, benzene, chloroform, acetone, methanol and water by soxhlet extraction in increasing order of their polarity. The extracts were concentrated and dried to obtain a residue. The dried extracts were weighed and the required quantity of the same was dissolved in appropriate solvents for further experiment. Shade dried stem of *E. hirsutum* was also extracted in the same manner for quantitative estimation of total phenol and flavonoids contents. [10]

Phytochemical Investigation

Review Article

A Brief Review on Diabetic Neuropathy

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Received: 30.11.17, Revised: 25.12.17, Accepted: 05.01.18

ABSTRACT

Diabetic nephropathy is the leading cause of kidney disease in patients starting renal replacement therapy and affects 40% of type 1 and type 2 diabetic patients. It increases the risk of death, mainly from cardiovascular causes, and is defined by increased urinary albumin excretion (UAE) in the absence of other renal diseases. Diabetic neuropathy can be classified as peripheral, autonomic, proximal, or focal. A number of risk factors have been identified in the development of DN that includes genetic susceptibility, elevated blood pressure, increased blood sugar, smoking and dyslipidemia. Moreover, various hyperglycemia-induced signaling mechanisms including increased formation of advanced glycation end products (AGEs), enhanced reactive oxygen species (ROS) generation and activation of protein kinase C (PKC). ACE inhibitors and angiotensin receptor blockers (ARBs) appeared to be successful in reducing the proteinuria and decreasing the creatinine doubling rate. These drugs decrease urinary albumin excretion (UAE) and the rate of progression from microalbuminuria to more advanced stages of DN and hence, the combination of these classes of drugs has been proposed as an alternative to treat DN. Replacing red meat with chicken in the usual diet reduced UAE by 46% and reduced total cholesterol, LDL cholesterol, and apolipoprotein B in microalbuminuric patients with type 2 diabetes in a 4-week study.

Keywords: Diabetic nephropathy, urinary albumin excretion (UAE), ACE inhibitors.

INTRODUCTION

Diabetic neuropathies are a family of nerve disorders caused by diabetes. People with diabetes can, over time, develop nerve damage throughout the body. Diabetes can harm your nerves. That damage, called neuropathy, may be painful. It can happen in several ways, and they all seem to be related to blood sugar levels being too high for too long. Some people with nerve damage have no symptoms. Others may have symptoms such as pain, tingling, or numbness—loss of feeling—in the hands, arms, feet, and legs. Nerve problems can occur in every organ system, including the digestive tract, heart, and sex organs. About 60 to 70 percent of people with diabetes have some form of neuropathy. Involvement of the peripheral and autonomic nervous systems is probably the most common complication of diabetes. The duration and severity of hyperglycemia is an important risk factor for the development of diabetic neuropathy in patients with type 1 or type 2 diabetes. People with diabetes can develop nerve problems at any time, but risk rises with age and longer duration of diabetes. The highest rates of neuropathy are among people who have had diabetes for at least 25 years. Diabetic neuropathies also appear to be more common in people who have problems controlling their blood glucose, also called blood sugar, as well as those with high levels of blood fat and blood pressure and those who are overweight[1].

Causes

The causes are probably different for different types of diabetic neuropathy. Researchers are studying how prolonged exposure to high blood glucose causes nerve damage. Nerve damage is likely due to a combination of factors:

- Metabolic factors, such as high blood glucose, long duration of diabetes, abnormal blood fat levels, and possibly low levels of insulin.
- Neurovascular factors, leading to damage to the blood vessels that carry oxygen and nutrients to nerves.
- Autoimmune factors that cause inflammation in nerves.
- Mechanical injury to nerves, such as carpal tunnel syndrome.
- Inherited traits that increase susceptibility to nerve disease.
- Lifestyle factors, such as smoking or alcohol use.

Symptoms

Symptoms depend on the type of neuropathy and which nerves are affected. Some people with nerve damage have no symptoms at all. For others, the first symptom is often numbness, tingling, or pain in the feet. Symptoms are often minor at first, and because most nerve damage occurs over several years, mild cases may go unnoticed for a long time. Symptoms can involve the sensory, motor, and autonomic—or involuntary—nervous systems. In some people,

Influence of GDF-11 in Aging Process : An Review

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ABSTRACT

Aging is one of the phases of individual's life span, which everyone wants to escape. The process of aging is much more a social phenomena than biological phenomena. Aging brings many changes such as, loss of eyesight, hearing loss, dementia, etc. Aging may give rise to diseased states such as, heart disease, cancer, cerebrovascular disease (relating to blood vessels that supply the brain), pneumonia and flu, and chronic obstructive pulmonary diseases. The key-factor behind aging is the GDF11, i.e., Growth and Differentiation factor-11. GDF11 is also known as Bone Morphogenetic Factor-11 (BMP11). It is termed as key circulating 'anti-aging' factor. GDF11 is expressed in wide range of tissues and has been shown to play important roles in development of olfactory system, retina and pancreas. It functions in regulating anterior-posterior patterning of the axial skeleton muscle system. Scientists theorize that aging likely results from a combination of many factors viz., Lifestyle, Diseases and Genes. GDF11 is essential for mammalian development and has been suggested to regulate aging of multiple tissues, whereas myostatin is a well-described negative regulator of postnatal skeletal and cardiac muscle mass and modulates metabolic processes.

Keywords – Aging, GDF11, Theory of aging, Process of aging

INTRODUCTION

A life course is the period from birth to death, including a sequence of predictable life events such as physical maturation and the succession of age-related roles: child, adolescent, adult, parent, senior etc. Aging is one of the phases of individual's life span, which everyone wants to avoid. The process of aging is much more a social phenomena than biological phenomena. Some people fear old age and do many things to avoid it, seeking medical and cosmetics remedies for the natural effects of age. Normally, aging brings many changes such as, loss of eyesight, hearing loss, dementia, etc. Aging may give rise to diseased states such as, heart disease, cancer, cerebrovascular disease (relating to blood vessels that supply the brain), pneumonia and flu, and chronic obstructive pulmonary diseases. Numbers of psychological problems associated with aging are dementia, depression, anxiety, paranoia, dread, apprehension, sleep problems, behavioral disorders and most commonly Alzheimer's disease.[1]

Scientists theorize that aging likely results from a combination of many factors viz., Lifestyle, Diseases and Genes. Lifestyle changes and disease condition are the consequences of aging. The key-factor behind aging is the GDF11, i.e., Growth and Differentiation factor-11. GDF11 is also known as Bone Morphogenetic Factor-11 (BMP11). It is termed as key circulating 'anti-aging' factor. [1] It is a member of TGF-β super-family and is derived along with myostatin (GDF-8). GDF11 is a protein that, in humans is encoded by the gene GDF11. [3] It acts as a cytokine and its paralog is MSTN gene. [3] It is a myostatin-homologous protein that acts as an inhibitor of nerve tissue growth. [4][17] Growth differentiation factor 11 (GDF11) and myostatin (or GDF8) are closely related members of the transforming growth factor β superfamily and are often perceived to serve similar or overlapping roles.[5][6] Both GDF11 and myostatin are synthesized as precursor molecules where an N-terminal pro-domain is cleaved from a C-terminal signaling or mature domain by a furin protease enzyme.[15] GDF11 is essential for mammalian development and has been suggested to regulate aging of multiple tissues, whereas myostatin is a well-described negative regulator of postnatal skeletal and cardiac muscle mass and modulates metabolic processes.[15] In 2014, GDF11 was described as an anti-aging factor in two publications based on results of parabiosis

How to cite this article: Sharma D, Kosalge S, Dixit SR; Influence of GDF-11 in Aging Process : An Review; PharmaTutor; 2017; 5(12); 18-29

Review on Moisture activated Dry Granulation Process

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ABSTRACT

Tablets are unit solid dosage form of medicament which largely used to compare other dosage form of medicaments. In tablet manufacturing, wet granulation and dry granulation methods largely used as compare to MADG process. In wet granulation and dry granulation methods various steps has been carried out like dispensing and shifting, dry mixing, granulation, pre-drying, shifting, premixing, lubrication and compression. But in MADG process, escape various steps like slugging, pre- drying, shifting, and drying. Hereby in MADG process save energy, cost of product and time also. The main object of review is hereby moisture activated dry granulation process very beneficial in case of water insoluble drug and water poorly soluble drug other than granulation method like wet granulation. Another objective of review how moisture activated dry granulation process carried out and given various advantages over the other granulation method. In water insoluble drug case MADG process largely used and very useful method for pharmaceutical industries.

Keyword: wet granulation, dry granulation, Moisture Activated Dry Granulation process

INTRODUCTION

Tablet is a unit solid dosage form containing active ingredient with or without suitable excipients. These are most widely used dosage form. The main objective of the design and manufacture of the compressed tablet is to deliver orally correct amount of drug in the proper form over proper time and at desired location, so as to have suitable chemical integrity protected at the point of its action. (Aniket et al., 2011)The physical design, manufacturing process, and complete chemical makeup of the tablet can have a profound effect on the efficiency of the drug being administered. (Aniruddha et al., 2001) Poorly water soluble drugs are associated with slow drug absorption leading eventually to inadequate and variable bioavailability and nearly 40% of the new chemical entities currently being discovered are poorly water-soluble drugs. (B.Venkateswara et al., 2014) Based upon their permeability characteristics, the Biopharmaceutics classification system (BCS) classifies such drugs in two major classes, i.e., Class II and IV. The BCS class II drugs are poorly water-soluble entities with high permeability. Most formulation strategies for such drugs are targeted at enhancing their fine dispersion at absorption level. (Devender et al., 2017) Ibuprofen being poorly water-soluble drug known to demonstrate dissolution or solubility limited absorption. The bioavailability of the drug is low, yet its rate of absorption is quite inconsistent and delayed with time. Based upon its aqueous solubility and various dissolution parameters, the drug bioavailability can unambiguously be regarded as limited solely to dissolution. (Devender et al., 2017)

Tablet Manufacturing Process

Tablet manufacturing process can be broadly classified as granulation and direct compression. Granulation process may be defined as the size enlargement process in which fine or coarse particles is converted into physically stronger and larger agglomerates having good flow properties, better compression characteristics and uniformity and a process for collecting particles together by creating bonds between them. It is the most widely used technique in the pharmaceutical industry for the preparation of materials for tabletting. (Sharma et al., 2007)

Granulation may be either wet granulation or dry granulation i.e., by using binder solution or, by using dry binder. Pharmaceutical granules typically have a size range between 0.2 to 4.0 mm, depending on their subsequent use. Most of formulation in tablet

How to cite this article: Sharma DM, Kosalge SB, Lade SN; Review on Moisture activated Dry Granulation Process; PharmaTutor; 2017; 5(12); 58-67

Original Article

Formulation and *in-vitro* drug Released Mechanism of CNS Acting Venlafaxine Nanostructured Lipid Carrier for Major Depressive Disorder

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ABSTRACT

Venlafaxine (VLX) is a first line, dual acting and unique antidepressant drug which belong to the class of serotonin and norepinephrine reuptake inhibitors. Oral administration of VLX has many adverse effects, poor bioavailability due first-pass hepatic metabolism and low permeability shows poor antidepressant action in the brain. The aim of this present study was to formulate Venlafaxine Nanostructured lipid carrier (VLX-NLC) and deliver directly into the brain through intranasal route. VLZ-NLC were prepared by Melt-Emulsification-Ultrasonication process and characterized by particle size, polydispersity index, zeta potential, Encapsulation efficiency and analyzed by differential scanning calorimetry (DSC), X-ray diffraction (XRD), transmission electron microscope (TEM). The VLX-NLC was also evaluated for in-vitro drug release and ex-vivo sheep nasal mucosa permeation. The mean particle size of VLX-NLC was between 155 and 293 nm in diameter with entrapment efficacy was up to 74.13%. TEM gave confirm of spherical nature of NLC. The DSC result shows a sharp peak at 208°C corresponds to melting peak hence confirm the peak of Venlafaxine and X-ray diffraction 2θ scattered angle represent crystallinity nature of pure Venlafaxine whereas VLX-NLC reveals decrease intensity of peak which indicates amorphization of VLX due to solubilization in lipid. In vitro studies exhibit initial burst release and afterward prolong release, ex vivo permeation through nasal sheep mucosa showed 66.45 % of drug diffused in 24 h from VLX-NLC.

Key words: Venlafexine, Nanostructured lipid carrier, Antidepressant.

INTRODUCTION

Depression is a major depressive disorder which common, serious mental illness and prevents a person from functioning usually. It is related to the high mortality rate.[1] However pathology of mental illness is not known but have a deficiency of norepinephrine and serotonin called as monoamines in the brain may cause depression.[2] Symptoms including irritability, fatigue, Worry and restlessness, experiences of nervousness, impaired Concentration and sleep disturbance.[3] The brain is a delicate organ. Delivery of drugs into the brain is a challenge in the management of neurological disorders due to the presence of blood-brain barrier (BBB).[4] Blood-Brain Barrier is a specialized system of capillary endothelial cells that protects the brain from Entry of harmful neurotoxic substances in the bloodstream while Supplying to the brain with the required nutrients for proper function and obstacle to the delivery of active drug constituent into the Central Nervous System (CNS) for disease treatment.[5,6,7]

Intranasal delivery of drugs results in high blood levels as compared to intravenous route.[8] Intranasal (IN) drug delivery is needle-free, non-invasive, painless, self and alternative administration route to targeted drugs directly to the brain via

Submission Date: 14-07-2017;
Revision Date: 25-09-2017;
Accepted Date: 23-11-2017.

DOI: 10.5530/ijper.52.2.26

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www.ijper.org

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Review Article
July 2017 Vol.:9, Issue:4

A Review: Wheat Grass and its Health Benefits

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
HUMAN

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Submission: 2 July 2017
Accepted: 10 July 2017
Published: 25 July 2017

HUMAN JOURNALS
www.ijppr.humanjournals.com

Keywords: Wheat grass; Gramineae; Anti-inflammatory; Anticancer; Anti-Rheumatoid Arthritis.

ABSTRACT

The shoot of *Triticum aestivum* Linn. (Hindi Name- gehun, kanak; Sanskrit name- godhuma) is called as a wheat grass, belonging to the family: Gramineae, which possess high chlorophyll content and essential vitamins, minerals, vital enzymes, amino acids, dietary fibers. Wheat grass has been shown to posse's anticancer activity, anti-inflammatory conditions, anti-rheumatoid arthritis anti-ulcer activity, antioxidant activity, anti-arthritic activity, and blood building activity in thalassemia. Wheatgrass has been traditionally used, since ancient times, to treat various diseases and disorders. Presently, there are a number of wheat grass suppliers, in almost all cities of India, supply fresh wheatgrass, on daily basis to their regular customers by the home-delivery system for various ailments and as the health tonic.

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Review Article
June 2017 Vol.:9, Issue:3

Nanosponges: Novel Approach for Controlled Release Drug Delivery System

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
HUMAN

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Submission: 2 June 2017
Accepted: 7 June 2017
Published: 25 June 2017

Keywords: Nanosponges, nanoscales, bioavailability, controlled release

ABSTRACT

For effective controlled drug delivery system nanosponges has shown significant approach Nanosponge is a novel and emerging technology which plays a vital role in targeting drug delivery in a controlled manner. Nanosponges are tiny sponges having size of about a virus and can easily penetrate through skin. Tiny sponges circulate around the body until they reach to specific target site and stick on the surface and start to release drug in controlled manner drug release at specific site instead of circulating overall body it is more effective for targeted drug delivery system they enhance bioavailability, solubility and reduces side effects. Nanosponges prevent drug and protein degradation. Both lipophilic and hydrophilic drugs are incorporated in Nanosponge. Nanosponges are capable of providing solutions for several formulation related Problems.The objective of this review article is to provide brief knowledge of nanosponges, its advantages and disadvantages, its method of preparation, evaluation and applications.

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ORIGINAL ARTICLE

Phyto-physicochemical and high performance thin layer chromatography investigation of *Melilotus officinalis* Linn.

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Abstract

Context: *Melilotus officinalis* belongs to family Leguminosae (Fabaceae), historically has been used for a variety of medicinal purposes. Despite its popular medicinal utilization, still no conclusive study has been reported so far regarding the pharmacognostical standardization. **Aim:** Thus, the present study was focused to scientifically establish a standard monograph of *M. officinalis* on the basis of physicochemical and phytochemical parameters. **Materials and Methods:** The various physicochemical parameters such as ash values, extractive values, volatile oil content, moisture content, and fluorescence analysis of *M. officinalis* were determined for ascertaining the quality of crude drug. The preliminary qualitative and quantitative phytochemical analysis and high performance thin layer chromatography (HPTLC) of *M. officinalis* were performed. **Results:** The physicochemical parameters were established. The various phytochemicals such as carbohydrates, sugar, sterols, triterpenoids, anthraquinone glycosides, saponin glycoside, flavonoids, tannins, and phenolic compounds were detected in various extracts of *M. officinalis*. The methanolic and aqueous extract of leaves was found to contain high amount of total phenols and flavonoids compared to stem. The HPTLC fingerprinting of various phytochemical in methanol and aqueous extract was done. **Conclusion:** The obtained data would serve as a useful guide toward establishing pharmacognostic standards, identification, assessing purity, standardization, and preparation of monograph of *M. officinalis*.

Key words: Fabaceae, high performance thin layer chromatography, *Melilotus officinalis* Linn., yellow sweet clover

INTRODUCTION

The plant *Melilotus officinalis* belongs to family Leguminosae (Fabaceae), known as yellow sweet clover in English and aspurk in Hindi. It is a tall, robust biennial herb, about 1 meter in height. *M. officinalis* have trifoliolate leaves, the leaflets is obovate, oblong or oblanceolate in shape. The flowers are in lax racemes, yellowish in color, ovoid pods, transversely rugose, compressed brown when ripe. The seeds are oval in shape, 2-3 mm in diameter, yellowish green and smooth.[1] *M. officinalis* believed to be native to Pakistan, Kashmir (Nubra Valley and Ladakh at high altitude of about 3000-4000 m), Tibet, Russia, China, Turkey, and Middle, Southern Europe and it was introduced in America and Tropical Africa.[2] The earlier claims showed that *M. officinalis* has iron chelating,[3] antibacterial, antitumor,[4] anti-inflammatory,[5] antihypertensive,[6] and astringent activity.[7] The plant is aromatic, emollient, carminative. It relieves flatulence, externally applied as poultice for pains and aches. The small fruits are used as demulcent, maturant, tonic, aphrodisiac, and useful in leukoderma.[8] It was reported that *M. officinalis* contains flavonoids and various phenolic compounds, melilotin, volatile oil, mucilage, tannin, fatty acid, triterpenes, coumarin, bishydroxycoumarin, choline, and glycosides.[9] Previously, we had reported the morphological and microscopical character of *M. officinalis*[10] but still the detail pharmacognostical standardization of *M. officinalis* is lacking. Hence, the present work was focused to investigate the phyto-physicochemical properties of *M. officinalis*.

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Received: 24-03-2017
Revised: 08-05-2017
Accepted: 15-05-2017

ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 8, Issue, 4, pp. 16676-16682, April, 2017

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Review Article

REVIEW ON LEPTOSPIROSIS IN ANIMALS AND HUMAN

***Suchita G. Waghmare., Rasika R. Nikhade and Satish B. Kosalge**

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DOI: http://dx.doi.org/10.24327/ijrsr.2017.0804.0196

ARTICLE INFO

Article History:

Received 17th January, 2017
Received in revised form 21th February, 2017
Accepted 28th March, 2017
Published online 28th April, 2017

Key Words:

Leptospirosis, Leptospira, microscopic agglutination test, antibiotics.

ABSTRACT

Leptospirosis is a contagious disease which infects both animals and humans. It is caused by bacteria called Leptospira. It can affect almost all mammals. Regular contact with the environment is a major risk factor, Laboratory testing for leptospiral infections is important both for diagnosis and management of the patients. Definitive diagnosis of leptospirosis is made by culture of Leptospira spp. from clinical samples such as blood or urine, or by the reference serological assay, the microscopic agglutination test (MAT). Infections in humans are known to occur primarily when individuals come in contact, directly or indirectly, with urine containing viable leptospires from rodents, or by ingestion of contaminated food or water. Several factors, such as age, sex, season, geographical location, and occupation have been associated with human leptospirosis The clinical presentation varies from patient to patient; hepato-renal failure, myocarditis, severe pulmonary hemorrhage with respiratory distress and meningitis are some of the syndromes reported commonly. Antibiotic treatment early in the illness may shorten the duration of fever and hospitalization for severe cases, penicillin is the preferred drug. For allegoric patients or less severe cases, Doxycycline, ampicillin or erythromycin can be given.

INTRODUCTION

Leptospirosis is a contagious disease which infects both animals and humans. It is caused by bacteria called Leptospira. There are over 200 different strains of Leptospira found worldwide, with infections being most prominent in areas that have a hot and humid climate. Leptospirosis is considered an occupational hazard for many people who work outdoors or with cattle, for example farmers, veterinarians, abattoir workers, sewer workers etc. [1,2]

Leptospirosis is a disease caused by beactria (germs) that can be found in all mammals. The bacteria are spread through the urine of infected animals or people, and can live in polluted water. Some people may get it from touching or swallowing water that has these bacteria. People can also get this disease through direct or indirect contact with the infected urine of people or dogs. The bacteria can get into a person's body through eating or drinking food or water with these bacteria, through a cut in the skin, or through mucous membranes (eyes, nose, mouth, or anusoglobinuria (blood/hemoglobin in urine), jau. Leptospirosis is a bacterial disease that affects farm animals, wildlife and humans. There are many different strains or serovars, carried by rodents and many other wild animals including rabbits, skunks and birds. Cattle, pigs and dogs are the main domestic animal carriers of leptospirosis. Leptospirosis in cattle is generally caused by one of two strains: Leptospira hardjo or Leptospira Pomona. These two bacteria infect the kidney and genital tract of cattle. [2]

The disease was first described by Adolf Weil in 1886 when he reported an "acute infectious disease with enlargement of spleen, jaundice, and nephritis." *Leptospira* was first observed in 1907 from a post mortem renal tissue slice. In 1908, Inada and Ito first identified it as the causative organism and in 1916 noted its presence in rats. Leptospira bacteria have been found in all farm animals, rodents and wild animals. They colonize the kidneys of infected animals and, in females, they also colonise the reproductive tract. Infected animals can carry the bacteria for long periods, shedding them in urine and at birth or abortion, thus contaminating the animals' environment. [3, 4, 5, 6]

- Leptospirosis is also spread in contaminated water supplies, food, pastures and soil.
- Many infected animals do not display any illness. These apparently healthy carriers are the main source of infection for other cattle as well as for humans.
- The bacteria can live for a long time in surface fresh water, damp soil, vegetation and mud, but are very quickly killed on dry soil or by sunlight.
- Flooding after heavy rainfall can spread the bacteria to previously uninfected farms. Outbreaks of leptospirosis

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ISSN: 0976-8081

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 8, Issue, 4, pp. 16379-16383, April, 2017

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Review Article

PROTEIN KINASE INHIBITORS IN CANCER TREATMENT: A REVIEW

Lata C. Potey* and Satish Kosalge

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DOI: http://dx.doi.org/10.24327/ijrsr.2017.0804.0139

ARTICLE INFO

Article History:

Received 15th January, 2017
Received in revised form 25th February, 2017
Accepted 23rd March, 2017
Published online 28th April, 2017

Key Words:

Protein kinases, Growth Blockers, Tyrosine Kinase Inhibitors, Cancer.

ABSTRACT

Protein kinases have important role in cell proliferation & differentiation of cell. They involved in diverse biological processes like growth, differentiation, metabolism and apoptosis in response to external and internal stimuli, mediator of signaling cascade. Tyrosine kinases are enzymes that selectively phosphorylates tyrosine residue in different substrates. Over expression of these tyrosine kinases receptor cause development of human cancer. So lot of work is done to understand role of tyrosine kinases in the pathophysiology of cancer. Defective regulation of growth processes plays a role in the genesis and progression of most type of cancer. Oncogenic activation of tyrosine kinase due to mutation, autocrine-paracrine stimulation in cancer cells can be blocked by selective tyrosine kinase inhibitors and thus considered as a promising approach for treatment of cancer. This review describes the role of growth factors in development of cancer & the role of TK inhibitors or growth blockers on treating cancer. This review article describes the mechanism of action, structures, and side effects of potent protein kinase inhibitors.

INTRODUCTION

A proteinkinase is a kinase enzyme that modifies other proteins by chemically adding phosphate groups to them (phosphorylation). Phosphorylation usually results in a functional change of the target protein (substrate) by changing enzyme activity, cellular location, or association with other proteins. The human genome contains about 500 protein kinase genes and they constitute about 2% of all human genes.[1] Up to 30% of all human proteins may be modified by kinase activity, and kinases are known to regulate the majority of cellular pathways, especially those involved in signal transduction. Protein kinases are also found in bacteria and plants.

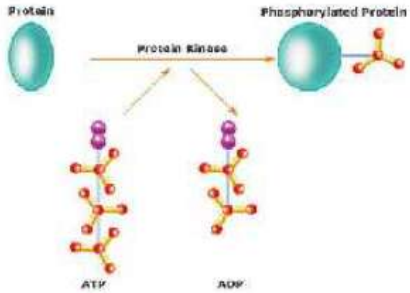

Figure 1 Protein Phosphorylation

Protein Kinase Group

The human protein kinase family is divided into the following groups:

- AGC kinases - containing PKA, PKC and PKG.
- CaM kinases - containing the calcium/calmodulin-dependent protein kinases.
- CK1 - containing the case in kinase 1 group.
- CMGC- containing CDK, MAPK, GSK3 and CLK kinases.
- STE - containing the homologs of yeast Sterile 7, Sterile 11, and Sterile 20 kinases.
- TK - containing the tyrosine kinases.
- TKL - containing the tyrosine-kinase like group of kinases.

A protein kinase inhibitor is a type of enzyme inhibitor that can block the action of protein kinases. Protein kinases add a phosphate group to a protein in a process called phosphorylation, which can turn a protein on or off and therefore affect its level of activity and function. Protein kinase inhibitors can be subdivided according to the amino acid on a protein that they add the phosphate to (e.g serine, threonine or tyrosine) in order to inhibit phosphorylation of that amino acid. Kinases mostly act on both serine and threonine, but tyrosine kinase acts on tyrosine only and some dual-specificity kinases act on all three of these amino acid residues. Some protein kinases also phosphorylate other amino acids, such as histidine kinases that act on histidine residues.

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IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Research Article
April 2017 Vol.:9, Issue:1

Column Chromatographic Isolation of Docosahexaenoic Acid from Fish Oil and its Assessment by Analytical Techniques

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
HUMAN

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Submission: 5 April 2017
Accepted: 10 April 2017
Published: 25 April 2017

www.ijppr.humanjournals.com

Keywords: Docosahexaenoic acid, Column chromatography, Thin layer chromatography, High performance thin layer chromatography, Gas chromatography

ABSTRACT

Docosahexaenoic acid (DHA) was isolated from fish oil and identified by gas chromatography. The isolation of DHA was carried out by the column chromatography. The preparation of column using silica gel 60-120 mesh and elution of column with different solvent in increasing order of polarity was performed. Isolated fractions were subjected to identification test for DHA by thin layer chromatography using solvent benzene. Isolated DHA was then subjected to high performance thin layer chromatography using chloroform as solvent. Determination of isolated DHA was carried out by gas chromatography using hexane as a solvent. The chromatogram of isolated DHA and standard DHA were compared. It was showed that in thin layer chromatography the fraction 51-58 and 72-85 showed single spot in benzene mobile phase having Rf value 0.56 when compared with standard DHA which matched with Rf Value of standard DHA. The retention time of isolated DHA and standard DHA by gas chromatography were 5.73 and 5.01 respectively. Isolated DHA showed 95.21 percentage purity. It was observed that fish oil can be used as precursor of DHA.

Original Article

Insilico Design, Synthesis of Hybrid Taurine Amino Acid and Peptide Analogues for Studies on Antioxidant and Hepatoprotective Activity

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ABSTRACT

Introduction: The liver performs normal metabolic homeostasis of the body as well as biotransformation, extraction and detoxification of many compounds. Due to this it is more susceptible to disease. Near about 900 drug are withdraw from the market due to hepaptoxicity. The objective of the work to synthesis the series of hybrid taurine amino acid and peptide analogues in which the various combinations of taurine amino acid, Di-peptide and Tri- peptide were synthesized. **Aims:** In this study, we mainly focused on the hepatoprotective aspects of hybrid taurine amino acid peptides analogues before the synthesis we carry out the *insilico* designing of molecules and from the results of this *insilico* study we carry forward the synthesis of hybrid compound followed by their *in vitro* and *in vivo* studies. **Results:** the binding affinity of the designed compound towards CYP2E1 (3GPH) was selected on the basis docking score The compound SSSB-16 shows the maximum score having the docking score is -24.84 as compared with single taurine and other taurine hybrid compound. The compound SSSB 15 is second in the list of docking score with the docking score is -24.67. The reference ligand .having the docking score is -11.90. All the compounds were screened for their *in vitro* antioxidant activity by employing DPPH, Nitric oxide scavenging method. From the *in vitro* result of antioxidant activity those compound which had shown maximum activity till use for hepatoprotective activity. The compound SSSB 3 which is the combination of Taurine-Glycine-Glycine shows the maximum activity as compared to all other compounds. **Conclusion:** From result good activity was noted for **SSSB3 (Taurine-Gly-Gly)** compound. From this it can be concluded that the amino acid hybrid with future being proof to be novel compound as hepatoprotective activity. It may be use as a supplement with the drugs to reduced hepatotoxicity.

Key words: *Taurine, Peptides, Cyp2e1, Antioxidant, Hepatoprotection.*

Submission Date: 25-01-2017;
Revision Date: 18-03-2017;
Accepted Date: 10-04-2017

DOI: 10.5530/ijper.51.2s.55

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INTRODUCTION

Amino acids are attracting increasing attention as therapeutics due to their role as mediators of key biological functions associated with their low toxicity and high specificity. A large number of peptide –based drugs are now being marketed because new synthetic strategies have been developed in recent year. Many amino acid conjugate is known for reducing hepatotoxicity and improving the physicochemical properties of the various drugs. The amino acids are the dietary constituents and nontoxic as compared to the other carrier. The water soluble amino acids have the ability to increase the water solubility of poorly soluble drug.[1] Due to this property, amino acid helps to improve the bioavailability and the pharmacokinetics of drugs. In this paper we are trying to focus on the *insilico* design, synthesis and there antioxidant study of some novel taurine and its hybrid amino acid peptide analogues. Taurine has been mostly used as an antioxidant apart from this it is also used in the treatment of various disease conditions like

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WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 6, Issue 3, 1523-1537. Research Article ISSN 2277– 7105

FORMULATION AND EVALUATION OF TABLETS CONTAINING POORLY WATER SOLUBLE DRUG BY MADG METHOD.

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Article Received on
19 Jan. 2017,
Revised on 09 Feb. 2017,
Accepted on 01 March 2017
DOI: 10.20959/wjpr20173-8055

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ABSTRACT

Tablet is a unit solid dosage form containing active ingredient with or without suitable excipient. These are most widely used dosage form.[1] The main objective of the design and manufacture of the compressed tablet is to deliver orally correct amount of drug in the proper form over proper time and at desired location, so as to have suitable chemical integrity protected at the point of its action. The physical design, manufacturing process, and complete chemical makeup of the tablet can have a profound effect on the efficiency of the drug being administered.[2] Poorly water soluble drugs are associated with slow drug absorption leading eventually to inadequate and variable bioavailability[3] and nearly 40% of the new chemical entities currently being discovered are poorly water-soluble drugs.[4] Based upon their permeability characteristics, the biopharmaceutics classification system (BCS) classifies such drugs in two major classes, i.e., Class II and IV. The BCS class II drugs are poorly water-soluble entities with high permeability. Most formulation strategies for such drugs are targeted at enhancing their fine dispersion at absorption level.[5] Ibuprofen being poorly water-soluble drug known to demonstrate dissolution or solubility limited absorption. The bioavailability of the drug is low, yet its rate of absorption is quite inconsistent and delayed with time. Based upon its aqueous solubility and various dissolution parameters, the drug bioavailability can unambiguously be regarded as limited solely to dissolution.[6] The main focus on moisture activated dry granulation method is better than other granulation method in case of poorly soluble drug tablets.

KEYWORD: *MADG, Tablets, Ibuprofen.*

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 6, Issue 3, 1417-1433. Research Article ISSN 2277– 7105

DESIGN OPTIMIZE AND EVALUATION OF FLOATING MICROSPHERES BY SOLVENT EVAPORATION TECHNIQUE OF ANTIULCER DRUG.

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Article Received on
19 Jan. 2017,

Revised on 08 Feb. 2017,
Accepted on 28 Feb. 2017

DOI: 10.20959/wjpr20173-8012

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ABSTRACT

Oral controlled release dosage forms have been extensively used to improve therapy of many important medications. In this we mostly focused on Gastro retentive floating microsphere containing Lafutidine, a second generation histamine H_2–receptor antagonist were prepared by solvent evaporation technique using HPMC K 15, Ethyl cellulose, EUDRAGIT® S 100, EUDRAGIT® L 100. The main objective of study to develop floating controlled drug delivery system that can provide therapeutically effective plasma drug concentration levels for longer durations. Which reduces the dosing frequency and minimized fluctuations in order to enhance the drug bioavailability. The prepared microsphere were evaluated for micromeritics study, percentage yield, in- vitro floating ability, in- vitro drug release and stability studies. The optimized formulation showed good floating for 8 hr. in vitro studies. The formulation stable at the end of 45 days with carried out by evaluated all the studies.

KEYWORD:- Microsphere, Lafutidine, EUDRAGIT® S 100, EUDRAGIT® L 100.

INTRODUCTION

Oral route is the most commonly route for drug administration and convenient used method of drug delivery but this route usually produces gastric emptying rate that varies from person to person with a short stomach transit time and the existence of large absorption window in the upper small intestine for several drugs.[1] Gastro retentive dosage forms (GRDFs) are a drug delivery formulation that are designed to be retained in the stomach for a prolonged time

Review Article Asian J Med Health Res. 2016;1(3) ISSN: 2455-8664

AJMHR
Asian Journal of Medical and Health Research
Journal home page: www.ajmhr.com

Pharmacognostic and Phytochemical Investigation on Seed of *Bixa orellana* Linn

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ABSTRACT

According to ethanomedical information plant *Bixa orellana* Linn (Bixaceae), commonly known as "annatto" in English and "Sinduri" in Sanskrit. Annatto is mainly used for its bright red fruit (seedpods) as a natural colour and hence it's common name "Lipstick tree". It has been widely used to treat various ailments such as Gonorrhoea, inflammatory, mosquito repellent, haemostatic, anti-dysentric, diuretic, epilepsy, kidney and some skin diseases. It is commonly used as aphrodisiac medicine. It is also used to treat urinary difficulties and stomach problems. A non toxic- Annatto dye which is obtained from pulp is used for colouring edible materials. The unique red colour to annatto is due to bixin and norbixin, which are Carotenoids.

Present work was carried out to determine its macro morphological, and chemo-micro-morphological profiles. These findings will be useful towards establishing pharmacognostic standards on identification, purity and quality.

Keywords: ***Bixa orellana*** **Linn**, Pharmacognostic evaluation, Physicochemical Analysis.

*Corresponding Author Email: umed_057@yahoo.co.in
Received 16 May 2016, Accepted 10 June 2016

Please cite this article as: Telrandhe UB., Pharmacognostic and Phytochemical Investigation on Seed of Bixa orellana Linn. Asian Journal of Medical and Health Research 2016.

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 5, Issue 2, 381-388. Review Article ISSN 2277– 7105

TOMATO EXTRACT AS AN ANTI-HYPERTENSIVE AGENT TO MODULATE BLOOD PRESSURE

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Article Received on
27 Nov 2015,

Revised on 18 Dec 2015,
Accepted on 07 Jan 2016

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ABSTRACT

Hypertension is the leading cause of cardiovascular disease. Tomatoes can make people healthier and decrease the risk of conditions such as cancer, osteoporosis and cardiovascular disease. Taking tomatoes and tomato products could reduce the risk of cardiovascular diseases because of lycopene in it. Red ripened tomato is a powerful antioxidant, Vitamin E and lycopene in tomato prevents LDL oxidation effectively. Tomatoes contain a great deal of Vitamin A and Vitamin C. Tomatoes are rich in potassium, which is known to reduce blood pressure. Lycopene extract from tomatoes is obtained by ethyl acetate extraction of the pulp of ripe red tomatoes. Provided herein is technology related to compositions and uses related to anti-hypertensive agents in tomatoes. Essential hypertension can be treated with one of several types of medications, including diuretics, β-adrenoreceptor blockers, inhibitors of angiotensin converting enzyme, calcium channel blockers, vasodilators and centrally acting agents. Vitamin C has effectively resulted in proper dilation of blood vessels in the cases of congestive heart failure, high cholesterol, angina pectoris and high blood pressure. It was discovered that sugar free tomato extracts exhibits an ability to reduce ACE activity.

KEYWORDS: Hypertension, Tomato, Lycopene, Antioxidant.

INTRODUCTION

Essential hypertension (EHT), one of the most prevalent chronic diseases, affects nearly a billion People all over the world. It is also a risk factor of cardiovascular morbidity and mortality.[1]

International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.9, pp 817-824, 2017

In Vitro Anti-inflammatory Activity of Quinoxalin Sulfonamides

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Abstract : Quinoxaline is six membered heterocyclic nitrogen containing two nitrogen atoms are based on pyrazine so also called as benzopyrazine. α dicarbonyl compounds reacts with aromatic ortho-diamine by consecutive addition-elimination mechanism to give quinoxalines.[1]Quinoxaline have become attractive target of extensive research due to its inherent properties and therapeutic uses. Quinoxaline finds many pharmacological activities like antibacterial, antifungal, antituberculer, anti-inflammatory, antihyperglycemic, antitumor etc.

The present study includes the synthesis of sulfonamide derivatives of quinoxalines, by addition-elimination mechanism. All derivatives were characterized by TLC, IR, and MS1HNMR.Quinoxaline sulfonamide derivatives were then subjected to anti-inflammatory screening on albino rat by carageenan induced paw edema and activity was recorded by Plethysmometer (UGO Basile 7140).

Key words : Quinoxaline; Anti-inflammatory; paw edema.

1. Introduction:

Quinoxaline is also called as benzopyrazine. It is heterocyclic compound containing benzene ring & pyrazine ring. Pyrazine are stable, colorless compound which are soluble in water. Unlike pyridine, they are expensive & not readily available & so are seldom used as starting material for synthesis of their derivative. Diazines are fused to benzene ring to form quinoxaline. The pyrazine ring system is found in the fungal metabolite aspergillic acid and in dihydro form in luciferin of several bettles including the fire fly is responsible for the chemiluminescence of this ostracod. Methoxypyrazine are very important component of aroma of many fruit's and vegetable such as Peas and Capsicum peppers and also of wines.

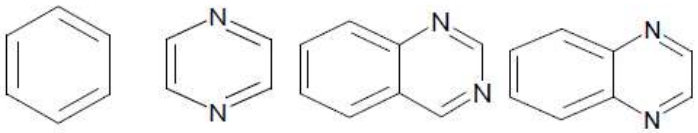

Figure 1: Synthesis of 2,3-diphenylquinoxaline 7-sulfonylchloride (parent compound).

International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.9, pp 552-556, 2017

Synthesis, Characterization and Study of Antimicrobial Activity of 1-Phenylazo-2-Naphthol

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Abstract : In this study, 1-Phenylazo-2-naphthol compound was synthesized in excellent yields via the diazotization of aromatic amines followed by coupling with 2-naphthol. This compound was characterized by various qualitative and quantitative techniques. The synthesized compound has been tested in vitro against a number of microorganisms in order to assess their antimicrobial properties using cup plate method. The minimum inhibitory concentrations (MIC) were also determined by the tube dilution technique. The products exhibited comparable activity with known standard drugs at same concentration.
Keywords : Azo dyes; Antimicrobial activity; Minimum Inhibitory Concentration.

1. Introduction

Azo compounds or dyes are characterized by the presence of the azo moiety (–N=N–) in their structure, conjugated with two, distinct or identical, mono- or polycyclic aromatic or heteroaromatic systems. Because of their specific physico-chemical properties and biological activities, they have found a broad application viz in pharmaceutical, cosmetic, food, dyeing or textile industry and analytical chemistry. However, the most typical and popular field of utility remains as their coloring function. Azo dyes are the largest and the most versatile class of dyes.

The azo compounds are applicable for biocidal treatment of textile materials because they exhibit biological activity [1]. Azo compounds are well known for their medicinal importance and are recognized for their applications as antidiabetic [2], antiseptics [3], antineoplastics [4], antibacterial [5, 6] and antitumor [7]. They are involved in a many biological reactions such as inhibition of DNA, RNA, carcinogenesis, protein synthesis and nitrogen fixation [8, 9]Azo compounds are valuable in the medicinal and pharmaceutical fields. [10]

In addition, azo compounds and their bioconjugates have attracted clinical interest related to phototherapy and photodiagnosis of tumors and their lesions [11]. They are also of great importance as intermediary products in organic synthesis and as initiators in polymer chemistry [12]. The existence of an azo moiety in different types of compounds has caused them to show antibacterial and pesticidal activity [13].

In the present work synthesis, characterization, and antimicrobial behavior of 1- phenylazo-2-naphthol has been carried out.

ejbps, 2016, Volume 3, Issue 12, 241-252. *Review Article* **SJIF Impact Factor 3.8**

EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES

http://www.ejbps.com

ISSN 2349-8870
Volume: 3
Issue: 12
241-252
Year: 2016

AN UPDATED REVIEW ON MEDICATED GUM AS A POTENTIAL TOOL FOR NOVEL DRUG DELIVERY SYSTEM

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Article Received on 13/10/2016 **Article Revised on 02/11/2016** **Article Accepted on 24/11/2016**

ABSTRACT

In the modern years scientific and technological advancements have been made in the research and development of oral drug delivery system. Such researches show significance of oral route amongst patients. We have reviewed all the features related with medicated chewing gum as a recent drug delivery by introducing the advantages and disadvantages, methods of manufacturing, composition differences, evaluation tests, factors affecting release of active ingredient and pharmaceutical significance of medicated chewing gums. Acceptance of medicated chewing gum has been augmented through years. Medicated chewing gum delivery system is suitable, easy to administer - everyplace, anytime and is pleasantly tasting making it patient acceptable. The advantages and therapeutic benefits of chewing gum support its development as we can see new formulations with new drugs contained have been produced from past and are going to find a place in market by formulation of novel medicated chewing gums.

KEYWORDS: Medicated chewing gum, oral drug delivery, patient compliance.

INTRODUCTION[1,2,3,4,10,24,37,55,56,57]

Chewing Gum (CG) also has proven value as a delivery vehicle for pharmaceutical and nutraceutical ingredients.[24,37] A novel drug delivery system creates additional patient benefits that will add new competitive advantages for a drug and thus increase revenue. Oral route is the most favored route amongst the patient and clinicians due to various advantages it offers.[57] Chewing gum is a pleasure that almost everyone enjoys.[57] Chewing gums are mobile drug delivery systems.[6] MCG represents the newest system with potential uses in pharmaceuticals, over the counter medicines and nutraceutical. Medicated chewing gum (MCG) is the gum base incorporating drug(s).[56] Chewing gum is being used worldwide since ancient times after man experienced the pleasure of chewing a variety of substance. One thousand years ago the Mayan Indians chewed tree resin from the sapodilla tree in order to clean their teeth and freshen their breath. Shortage of natural gum bases during World War II enhanced development of the synthetic gum bases that are used today.[1]

During chewing the drug contained in the gum is released into the saliva. The released drug has got two fates; either it could be absorbed through the oral mucosa or may reach the stomach for GI absorption. In fact both these two fates may occur simultaneously. So, medicated chewing gum offers advantages in comparison to conventional oral mucosal and oral dosage forms both for local effect, systemic effect and after absorption through the buccal and sublingual mucosal and from the gastrointestinal tract. Chewing gum can be retained in the oral cavity for a long period and, if the drug is readily absorbed across oral mucosa, chewing gum can provide a fast onset time for a systemic effect and the potential for prevention of gastrointestinal and hepatic first pass metabolism of susceptible drugs. Generally, medicated chewing gum has a good stability, the medicine can be taken easily and directly without the prerequisite of water, and if required, prompt discontinuation of medication is possible.[3,1]

In Children particularly may consider chewing gum as a more preferred method of drug administration compared with oral liquids and tablets. Medicated gum is a chewing gum with a reason to introduce medicated substances into blood stream faster than pills. A piece of chewing gum usually consists of gum core, which may or may not be coated. The core is composed of an insoluble gum base resin, elastomers, emulsifiers, fillers, waxes, antioxidants and softeners, sweeteners, flavoring agents, and in case of medical chewing gum, active substances. The water content of chewing gum is very low and no preservative is needed. The gum base determines the basic characteristics of the product; e.g. whether the texture is soft or hard to chew, whether it crumble, whether it stick to the teeth. It also determines the release profile of active substances and changing the

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 5, Issue 01, 1424-1434. Review Article ISSN 2277– 7105

SUDDEN INFANT DEATH SYNDROME: A REVIEW

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Article Received on
16 Nov 2015,

Revised on 09 Dec 2015,
Accepted on 31 Dec 2015

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ABSTRACT

Sudden infant death syndrome (SIDS) has been the focus of extensive research over the past several decades. Sudden infant deaths in infancy (SID) represent the commonest group of post-neonatal childhood deaths. The identification of specific medical causes of death at autopsy in SID has slightly improved in recent years, but around two-thirds of cases remain unexplained, being classified as SIDS, the diagnosis is based on a a thorough death scene investigation, autopsy, review of infant's and family's medical records and histories. The aim of this article is to review the current evidence for protocols of post-mortem investigations of SID, with particular emphasis on features which include characteristics, reporting causes, prevention, diagnosis and how to reduce the risk factors. The article will not discuss issues related to non-accidental or inflicted injury, which remain complex and beyond the scope of this review.

KEYWORDS: Sudden infant death, SIDS, Autopsy, Post-mortem investigation.

INTRODUCTION

Sudden infant death syndrome (SIDS) continues to be a devastating form of post neonatal death. The term Cot Death was coined in 1954 to describe sudden unexpected infant deaths that occur for no obvious reason. Such deaths have occurred throughout the ages but have become the major cause of post neonatal infant mortality as other causes of infant death have declined. In 1969 the term Sudden Infant Death Syndrome (SIDS) was proposed to describe those which remain unexplained after a postmortem examination. The terms are often used interchangeably and were gradually adopted after they were accepted as a registrable cause of natural death by the Coroners' Society and the Registrar General in England and Wales in autumn 1970. Because Sudden Infant Deaths were only identifiable in published national

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 5, Issue 01, 1135-1174. Research Article ISSN 2277– 7105

EFFECT OF AGMATINE IN SPINAL CORD INJURY MODULATION BY IMIDAZOLINE RECEPTORS

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Article Received on
15 Nov 2015,

Revised on 06 Dec 2015,
Accepted on 27 Dec 2015

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ABSTRACT

Background: Spinal cord injury often result in disability or loss of movement and sensation below the site of injury. Systematically administered agmatine significantly reduces the mechanical and thermal hyperalgesia as well as allodynia in neuropathic mice caused by spinal cord injury. However exact mechanism is still unclear. The present study examined the involvement of imidazoline receptor on functional recovery exhibited by agmatine following spinal cord injury. Method: Compression spinal cord injury was developed by placing 5g weight for 30 sec at thoracic vertebra 10-12 segment. Animal were injected with agmatine (2.5,5,10 mg/kg,i.p.), clonidine(0.1mg/kg), moxonidine(0.5mg/kg), efaroxan (1mg/kg), idazoxan (3mg/kg) and their combination observed for locomotor recovery. RESULT: Experimental spinal cord injury resulted in complete loss of movment of hindlimb in exposed animal. Agmatine treatment significantly improved locomotor recovery of the animals subjected to SCI. Imidazoline agonist clonidine moxonidine potentiated while, imadazoline antagonist idazoxan and efaroxan blocked effect of agmatine in SCI. Conclusion: Chronic agmatine treatment showed effect of locomotor recovery in SCI animal and evidences suggest that this effect was possibly mediated imidazoline receptors.

KEYWORDS: Spinal cord injury, agmatine, imidazoline receptor, locomotor recovery, mice.

1. INTRODUCTION

1.1. NEURAL MECHANISMS OF PAIN

Pain occurs whenever any tissues are being damaged, and it causes the individual to react to remove the pain stimulus as after spinal cord injury.

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 5, Issue 1, 1242-1254. Research Article ISSN 2277– 7105

SOLID DISPERSION TECHNIQUE FOR SOLUBILITY ENHANCEMENT OF WEAKLY WATER SOLUBLE DRUG (NAPROXEN)

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Article Received on
15 Nov 2015,

Revised on 06 Dec 2015,
Accepted on 26 Dec 2015

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ABSTRACT

Therapeutic effectiveness of a drug depends upon the bioavailability and ultimately upon the solubility of drug molecules. Solubility is one of the important parameter to achieve desired concentration of drug in systemic circulation for pharmacological response to be shown. pharmaceutical research that focus on improving the oral bioavailability of active agents include; enhancing solubility and dissolution rate of poorly water-soluble drugs and enhancing permeability of poorly water soluble drugs. There are different techniques to enhance the solubility of drug, among these solid dispersions have been known to be one of the recent means of improving the dissolution rate by enhancement of solubility and hence the bioavailability of poorly water soluble drugs. Solid dispersion refers to a group of solid products consisting of at least two different components, generally a hydrophilic matrix and a hydrophobic drug. The matrix can be either crystalline or amorphous. The drug can be dispersed molecularly, in amorphous particles (clusters) or in crystalline particles.

KEYWORDS: Solubility, bioavailability, solid dispersions.

INTRODUCTION

Drug absorption sufficient and reproducible bioavailability, pharmacokinetic profile of orally administered drug substances is highly dependent on solubility of that compound in aqueous medium.[1] Poorly water-soluble drugs involve many difficulties in the development of pharmaceutical dosage forms for oral delivery systems due to their low bio-availability.[2] When delivering an active agent orally it must first dissolve in gastric and/or intestinal fluids

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 5, Issue 01, 894-926. Research Article ISSN 2277– 7105

EVALUATION OF JUSTICIA GEND ARUSSA LEAVES EXTRACT FOR ANTI-INFLAMATORY AND ANALGESIC ACTIVITY

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Article Received on
07 Nov. 2015,

Revised on 28 Nov. 2015,
Accepted on 18 Dec. 2015,

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ABSTRACT

The Aim of The Present Study Was To Evaluate The Anti-Inflammatory And Analgesic Activity of The Different Extract of Leaves Justicia Gendarussa (EJG) In Animal Models. The Anti-Inflammatory Activity of The Extract Was Evaluated By Using Carrageenan-Induced Rat Paw Edema Method. The Analgesic Activity of The Evaluated For Its Central and pheripheral pharmacological actions by using eddy's hot plate method. The study was carried out in two different dose levels of 150 and 300 mg kg^{-1} orally. the EJG did out not produce any mortality up to 2000 mg kg^{-1} the ejg at the dose 300 mg kg^{-1} showed maximum inhibition of 50% in carrageenan induced paw edema. Dose dependent increase in latency of response in the hot plate method were observed with ejg at the dose 300 mg $kg^{-1.}$ the pharmacological screening of the extract showed significant ($p<0.001$-0.01) dose – depentend Anti-Inflammatory Activity with good Analgesic profile when compared with reference standard. The presence of flavonoids might be responsible for these activities and which are probably mediated via inhibition of various autocoids pormation release.

KEYWORDS: Justicia Gendarussa, pheripheral, autocoids pormation.

INTRODUCTION

The defense mechanism of living tissue is some time pathophysiologically manifested as inflammation. Drug which are used presently for the management of pain and inflammatory conditions are either narcotics e.g opoids or non-norcotics e.g salicylates and corticosteroids. All of these drugs have well documented toxic effect. Prolonged use of both steroidal and

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 5, Issue 01, 477-502. Review Article ISSN 2277– 7105

MICROEMULSION AND ITS APPLICATIONS NOVEL APPROACH TOWARDS THE DRUG DELIVERY

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Article Received on
30 Oct. 2015,

Revised on 22 Nov. 2015,
Accepted on 17 Dec. 2015,

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ABSTRACT

A microemulsion is a system of water, oil and an amphiphiles which is a single optically isotropic and thermodynamically stable liquid solution. Microemulsions can be considered as small-scale versions of emulsions, i.e., droplet type dispersions either of oil-in-water (o/w) or of water-in-oil (w/o), with a size range in the order of 5−50 nm in drop radius. Microemulsion formation is dependent on surfactant type and structure. The microemulsion formulations consist of one or more surfactants in combination with co-surfactant and drug dissolved in oil. If the surfactant is ionic and contains a single hydrocarbon chain microemulsion are only formed if a co-surfactant and/or electrolyte are also present. With double chain ionic and some non-ionic surfactants a co-surfactant is not necessary. Oils form a distinct core in the interior of the surfactant aggregate, resulting in enhanced solubilizing capacity of the oils with improved drug loading capacities of the microemulsion. Microemulsions are optically isotropic and thermodynamically stable liquid solutions of oil, water and amphiphile. Microemulsions are readily distinguished from normal emulsions by their transparency, low viscosity and more fundamentally their thermodynamic stability. It is well established that medium chain fatty acids influence tight junctions of the epithelial cells, and long chain fatty acids stimulate the lipoprotein synthesis and subsequent lymphatic absorption. Microemulsions are shown to be effective dermal delivery mechanism for several active ingredients for pharmaceutical and cosmetic applications. Topical microemulsion allows rapid penetration of active molecules due to the large surface area of the internal phase, and their components reduce the barrier property of stratum corneum. Microemulsions thereby enhance dermal absorption compared with conventional formulations and are therefore a promising vehicle due to their potential for transdermal drug delivery.

ejpmr, 2016,3(1), XXX-XXX

SJIF Impact Factor 2.026

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Review Article
ISSN 3294-3211
EJPMR

SELF-EMULSIFYING DRUG DELIVERY SYSTEM - A NOVEL APPROCH TO IMPROVE ORAL BIOAVAILABILITY

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Article Received on 01/11/2015 **Article Revised on 22/11/2015** **Article Accepted on 14/12/2015**

ABSTRACT

The oral route is the most favorite route of drug delivery for cure of a number of diseases. It is estimated that 35-40% of active substances are poorly soluble in water. The major problem in oral drug formulations is low and erratic bioavailability, which mainly results from poor aqueous solubility. The improvement of bio-availability of drugs with such properties presents one of the greatest challenges in drug formulations. Various technological strategies are reported in the literature including Micronization, solid dispersions or cyclodextrines complex formation and different technologies of drug delivery systems. SEDDS are promising advance for oral delivery of poorly water-soluble compounds or lipophilic drugs. SEDDS are ideally isotropic mixtures of drug, oil, surfactant and/or co surfactant. Purpose of this review article is to provide brief outline of self emulsifying drug delivery system & it's possible to increase the bioavailability of poorly soluble drugs.

KEYWORDS: Self-emulsifying drug delivery systems (SEDDS), drug delivery, Surfactant; Co Surfactant; bioavailability.

INTRODUCTION

The oral route is the most preferred route of drug delivery for cure of a number of diseases. Nearly 35 to 40% of newly launched drugs possess low aqueous solubility which leads to their poor dissolution and thereby low bioavailability, resulting in high intra & inter subject variability & lack of dose proportionality.[11, 12] For these drugs absorption rate from gastrointestinal tract is mainly governed by dissolution and improvement in solubility may lead to enhanced bioavailability.[1] Self-emulsifying drug delivery systems (SEDDS) possess unparalleled potential in improving oral bioavailability of poorly water-soluble or lipophilic drugs. Following their oral administration, these systems rapidly disperse in gastrointestinal fluids, yielding micro - or nanoemulsions containing the solubilized drug. Owing to its miniscule globule size, the micro/ nanoemulsified drug can easily be absorbed through lymphatic pathways; bypassing the hepatic first-pass effect.[2] The main techniques for converting SEDDS to SSEDDS are spray cooling, spray drying, adsorption onto solid carriers, meltgranulation, melt extrusion, super-critical fluid based methods and high pressure homogenization. But adsorption process is simple and involves simply addition of the liquid formulation to solid carriers by mixing in a blender.[3,21,22,23] In the case of sparingly soluble drugs that exhibit dissolution rate limited absorption, the SEDDS system offers a way to improve the rate and extent of oral absorption and to produce more reproducible blood-time profiles. Self-emulsifying formulations reach readily in the gastrointestinal tract (GIT), and the GI motility of the stomach and the intestine provide the necessary agitation for self emulsification. These systems have the advantage that the drug in dissolved form and the small droplet size provides a large interfacial area for the drug absorption. SEDDSs are physically stable formulations that are easy to manufacture, but when compared with emulsions, which are sensitive and metastable dispersed forms.[4] [5] Oral absorption of several drugs has been enhanced by SEDDS with different mechanisms. In SEDDS, solubility is most important factor. There are several ways by which of solubility of the drug can be enhanced, many of the methods which aimed at increase in the surface area of the drugs such as - Micronization, salt form of drug, use of metastable polymorphs, solvent deposition, selective adsorption on insoluble carriers, Selective adsorption on insoluble carriers, solid dispersion, solute solvent complexation. But, there are practical limitations of these techniques.[6, 7, 13]

DEFINATION OF SEDDS: SEDDS are defined as isotropic mixtures of natural or synthetic oils, solid or liquid surfactants or alternatively, one or more hydrophilic solvents & co-solvents/co-surfactants.[1]

PROPERTIES OF SEDDS[1, 6, 24, 27]

- They are able to self emulsify quickly in gastro-intestinal fluids & under the influence of gentle agitation.

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 4, Issue 12, 750-762. Review Article ISSN 2277– 7105

VESICULAR CARRIER FOR TRANSDERMAL DRUG DELIVERY SYSTEM –ETHOSOMES

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Article Received on
15 Oct 2015,

Revised on 05 Nov 2015,
Accepted on 25 Nov 2015

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ABSTRACT

Transdermal drug delivery system is one of the important drug delivery system. Skin is the main target of topical and transdermal preparations. The aim of transdermal drug delivery system is to cross the stratum corneum. Ethosomes are noninvasive delivery carriers that enable drugs to reach the deep skin layers and the systemic circulation. Now a days vesicles are used as cellular communication medium. Use of Ethosomes as vesicle widely spread. Ethosomes are the ethanolic phospholipids vesicles which are used mainly for transdermal delivery of drugs. Composed of hydroalcoholic or hydro/glycolic phospholipids in which the concentration of alcohols is relatively high. The high concentration of ethanol brings increase in fluidity of lipids hence increase in permeability of the skin and improves the drug penetration. Ethosomes formulation can contain many dugs. Ethosomes have higher penetration rate through the skin as compared to liposome so they can be used widely in place of liposome. Ethosomes have become an area of research interest, because of its enhanced skin Permeation, improved drug delivery, increased drug entrapment efficiency etc. The high concentration of ethanol makes the Ethosomes unique and Useful for transcellular delivery, delivery of hormones, anti-arthritis, anti-HIV etc.

KEYWORDS: Ethosomes, Ethanol, Transdermal delivery, Phospholipids, Vesicle.

International Standard Serial Number (ISSN): 2249-6807

International Journal of Institutional Pharmacy and Life Sciences 5(6): November-December 2015

INTERNATIONAL JOURNAL OF INSTITUTIONAL PHARMACY AND LIFE SCIENCES

Pharmaceutical Sciences

Review Article……!!!

Received: 30-10-2015; Revised: 18-11-2015; Accepted: 19-11-2015

A REVIEW ON GREEN CHEMISTRY

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Keywords:

Green chemistry

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ABSTRACT

This review article discusses real-world chemistry, introducing chemical principles as needed. Chemistry has been misused in many respects, such as the release of pollutants and toxic substances and the production of non biodegradable materials, resulting in harm to the environment and living things, including humans. It is now obvious that chemical science must be turned away from emphasis upon the exploitation of limited resources and the production of increasing amounts of products that ultimately end up as waste and toward the application of Chemistry in ways that provide for human needs without damaging the Earth support system upon which all living things depend. Fortunately, the practice of chemical science and industry is moving steadily in the direction of environmental friendliness and resource sustainability. The practice of Chemistry in a manner that maximizes its benefits while eliminating or at least greatly reducing its adverse impacts has come to be known as **Green Chemistry.** The beginning of green chemistry is frequently considered as a response to the need to reduce the damage of the environment by man-made materials and the processes used to produce them. A quick view of green chemistry issues in the past decade demonstrates many methodologies that protect human health and the environment in an economically beneficial manner.

ISSN 2349-7203

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals

HUMAN

Human Journals
Review Article
August 2015 Vol.:4, Issue:1

Note on Cochlear Implant: Develop Speech in Deaf and Mute People

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
HUMAN

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Submitted: 14 August 2015
Accepted: 19 August 2015
Published: 25 August 2015

Keywords: Cochlear implant, Bionic ear, born deaf, hearing loss

ABSTRACT

Cochlear implant is electromagnetic device which surgically placed in temporal bone of skull bone behind ear. Sometime it's called as "Bionic ear" because it was first time invented by America Bionic Corporation. Cochlear implant offers the hope of regaining or restoring the ability to sense sound for some people who have experienced significant hearing loss. Although it is not miracle device. Cochlear implant helps in some children and adults who are born deaf or hearing loss occurs late in life.

Research Article

INSILICO DESIGN AND DISCOVERY OF SOME NOVEL HYBRID AMINO ACID ANALOGS FOR THEIR HEPATOPROTECTIVE ACTIVITY

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ABSTRACT:
Hepatotoxicity, as injury to the liver that is connected with impaired liver function caused by contact with a drug or noninfectious agent. This includes the Natural chemical, chemical agents used in Industry and laboratories and herbal remedies can induce hepatotoxicity. Today near about 900 drugs have been identified which causes liver injury. Drug related hepatotoxicity is an important cause for withdrawing new drugs from the market. In this study designing of hybrid amino acid and peptide analogue of Taurine were carried out .All structures of the compound were drawn by using Chem. Office 10. All compounds were docked to crystal structures of Cytochrome P 450 system having CYP2E1 enzymes with PDB ID 3GPH using Flex X 2.1.3 of biosolve IT software to understand the interaction of ligands with different receptors. The compound SSSB 16 and SSSB 15 shows a very good score as compared to reference compound. Evaluation of ADME properties using Qik prop3.0 revealed that all compounds possess good physico-chemical properties. Insilico prediction of LD_{50} values in rats by oral administration was performed using a Pro Tox webserver. Additionally the synthesis and its evaluation of hepatoprotective activity is required to be performed to prove that these compounds are effective against hepatotoxicity as predicted by computer aided drug design.

Key Words: Hepatotoxicity, Taurine, Peptide, FlexX Docking, CYP2E1, 3GPH

INTRODUCTION

The Liver is the largest internal organ of body in adult its weight is about1. 4 kg. It plays an important role in many functions like metabolism, synthesis, storage and detoxification of many endogenous and exogenous compounds and converts to less toxic substances for excretion. [1] Most drugs are taken orally for this liver act as an entrance to the tissues followed by absorption from the gastrointestinal tract. Due to this function, it is the most vital organ. The liver is exposed to parent drug carried from the gastrointestinal tract through the portal vein and its metabolites produced through the hepatic vein by means of the systemic circulation. Natural chemicals, synthetic chemical agents used in Industry and laboratories and herbal remedies can induce hepatotoxicity. Today near about 900 drugs have been identified which cause liver injury. Drug related hepatotoxicity is an important cause for withdrawing new drugs from the market. [2]

Drugs and other chemical compounds may affect the liver in various ways. Acetaminophen overdose is the common cause of hepatic injury, approximately 40 % of cases of acute liver failures in USA. Hepatotoxicity is one of the important adverse drug reactions associated with the anti-tuberculosis drugs that may limit their use. Aspirin and the salicylates have recently been recognized as potentially hepatotoxic. Phenylbutazone can cause acute liver injury without involvement of other systems with therapeutic doses and following over dosage. [2, 3] Apart from this the prolong drug therapy, alcoholism, certain diseased condition also been the main cause of liver disease. In china and western medicine about 500-1500 substances and variety of chemicals are known to cause the liver disease. [4] According to the survey most of the cases of fulminate hepatic failure are observed due to the chemical hepatotoxicity. Due to this researcher are keener to produce such a molecule that can be useful for liver injury.

Many amino acid conjugate is known for reducing hepatotoxicity and improving the physicochemical properties of the various drugs. The amino acids are the dietary constituents and nontoxic as compared to the other carrier. The water soluble amino acids have the ability to increase the water solubility of poorly soluble drug. [5] Due to this property, amino acid helps to improve the bioavailability and the

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Received: 10.03.15, Revised: 25.04.15, Accepted: 20.07.15

International Standard Serial Number (ISSN): 2249-6807

International Journal of Institutional Pharmacy and Life Sciences 5(1): January-February 2015

INTERNATIONAL JOURNAL OF INSTITUTIONAL PHARMACY AND LIFE SCIENCES

Pharmaceutical Sciences

Research Article……!!!

Received: 23-01-2015; Revised: 28-01-2015; Accepted: 29-01-2015

DESIGN, GREEN SYNTHESIS, CHARACTERIZATION AND EVALUATION OF SOME BIGUANIDE DERIVATIVES FOR THEIR ANTIDIABETIC ACTIVITY

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Keywords:

Diabetes, Metformin, Green synthesis, Biguanides

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ABSTRACT

Diabetes is a metabolic disorder characterized by hyperglycaemia, glycosuria, hyperlipidaemia, negative nitrogen balance and sometimes ketonemia. It is a lifelong (chronic) disease in which there are high levels of sugar in the blood. There are two major types of diabetes-Type 1 diabetes, Type 2 diabetes. Antidiabetic drugs are used in treatment of diabetes or the compounds which lowers blood sugar level. Antidiabetic drugs have small half life. Hence there is a need to synthesize the higher potency biguanide having longer half life.

International Standard Serial Number (ISSN): 2249-6807

International Journal of Institutional Pharmacy and Life Sciences 5(1): January-February 2015

INTERNATIONAL JOURNAL OF INSTITUTIONAL PHARMACY AND LIFE SCIENCES

Pharmaceutical Sciences **Research Article……!!!**

Received: 19-01-2015; Revised: 22-01-2015; Accepted: 23-01-2015

ISOLATION OF ALPHA LINOLENIC ACID FROM LINSEED OIL AND ITS IDENTIFICATION BY GAS CHROMATOGRAPHY

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Keywords:

Alpha linolenic acid, Thin layer chromatography, Gas chromatography

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ABSTRACT

The alpha linolenic acid (ALA) was isolated from linseed oil and identified by gas chromatography. The isolation of ALA was carried out by the column chromatography. The preparation of column using silica gel 60-120 mesh and elution of column with different solvent in increasing order of polarity was done. isolated fractions were subjected to identification test for ALA by thin layer chromatography using solvent benzene and methanol (95:5). Determination of isolated ALA was carried out by gas chromatography using reagent hexane as a solvent. The preparation of standard and test solution of LA was prepared in chloroform. The chromatogram of isolated ALA and standard ALA were compared. It was showed that in thin layer chromatography the fraction 10-16 showed single spot in benzene and methanol(95:5 ratio) mobile phase having R_f value 0.86 when compared with standard ALA which matched with R_f Value of standard ALA. The retention time of isolated ALA and standard ALA by gas chromatography were 18.83 and 17.981 respectively. Isolated ALA showed 80.74 percentage purity. It was observed that besides fish oil, plant oil can be used as precursor of ALA. It was observed that the developed method of column chromatographic isolation of ALA from linseed oil is simple, accurate and precise.

INDO AMERICAN JOURNAL OF PHARMACEUTICAL RESEARCH

EVALUATION OF COAGULANT AND ANTI COAGULANT ACTIVITY OF SOME SPICES.

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ARTICLE INFO

Article history
Received 10/12/2014
Available online
07/01/2015

Keywords
Spices,
Anti Coagulation,
Arachidonic Acid,
Platelet Aggregation.

ABSTRACT

Spices do a whole lot more than liven up food. New research has found that the active ingredients in several common spices prevent platelet aggregation and blood clot formation without the side effects. Some spices when evaluated for anti blood coagulation the effect of the principle spice active compounds eugenol, piperine, pinene, alpha terpinol, borniol, geraniol , cinnamaldehyde, sinigrine, thymol, on human platelet aggregation. Demonstrated that each compound evaluated was able to significantly inhibit blood clotting. Furthermore, the compounds performed their anti-platelet aggregation activity against several different factors that promote the clotting of blood. Pinene, terpinol and borniol and geraniol the principle constituents of cumin and coriander respectively, were found to be the most potent inhibitors of arachidonic acid induced platelet aggregation. This ability was shown by the other tested compounds in the declining order of sinigrine, eugenol, thymol, cinnamaldehyde, and piperine.

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*Please cite this article in press as **L.C.Potey** et al. Evaluation of Coagulant And Anti Coagulant Activity of Some Spices. Indo American Journal of Pharm Research.2015:5(01).*