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Phytochemical Screening, *in-vitro* Anti-Diabetic and Anti-Microbial Activities of Hydro-Alcoholic Leaf Extract of *Syzygium cumini*

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Abstract

The plant under investigation (*Syzygium cumini*) was a large evergreen dicotyledonous plant and belongs to the family Myrtaceae. *Syzygium cumini* is a medicinal plant broadly used in conventional therapeutic preparation of many pharmacological activities. The goal of our investigation was to determine whether the leaf extracts of this plant held any significant anti-diabetic, anti-bacterial and anti-fungal activities. The Phytochemical screening of hydro alcoholic extract of *Syzygium cumini* leaves revealed that the extract is rich in phenols, flavonoids, triterpenoids, tannins and carbohydrates. In the present study, the In-vitro anti-diabetic property of *Syzygium cumini* leaves extracts was analyzed by using standard methods so as to ensure the biological potency of the plant. An *In vitro* anti-diabetic study was done by glucose uptake by yeast cells & inhibition of α-amylase enzymes. The results of the present study concluded that the hydro alcoholic extract of *Syzygium cumini* exhibited between 44.44% - 98.83% in glucose uptake by yeast cells when compared to metformin & 18.36% - 93.65% in α-amylase activity while compared to acarbose in dose dependent manner. Anti-microbial activity was evaluated employing the disc diffusion and agar well method. The extract of all the fractions and Amoxycillin and Fluconazole (standard) exhibited significant anti-bacterial & anti- fungal activity. The hydro alcoholic leaf extract produced significant effects as evaluated and Zone of Inhibition (ZOI) was measured.

Keywords
Syzygium cumini, *In vitro*, Anti-diabetic, Anti-microbial, yeast cells, α-amylase, ZOI.

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INTRODUCTION

Plants have served mankind since ages as they are reservoirs of important medicinal components and help to alleviate chronic diseases. The past was considered the synthetic era due to the commercial production of large varieties of synthetic drugs by pharmaceutical industries (Gershell *et al.*, 2005). Over time the continuous use of synthetic drugs caused severe side effects and led to resistance of microbes. Also, synthetic drugs are expensive and large populations cannot afford to get benefit from these drugs. During the last decades a global trend with focus on green medicines due to minimum side effects and cost effectiveness. Medicinal plants play an appreciable role in the development of modern herbal medicines as many diseases like cancer, liver diseases and arthritis find no complete cure in allopathy. The bioactive compounds of medicinal plants are used as anti-diabetic, chemotherapeutic, anti-inflammatory, anti-arthritic agents where no

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HERBAL DRUGS AND SCREENING MODELS FOR ANTI-FERTILITY AND ANTI-SPASMODIC ACTIVITY- A REVIEW

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ABSTRACT

The medicinal plants are used as miscarriage and contraceptive as well known to the ancient physicians of India. Some of the various medicinal plants extracts has been tested for their anti-fertility and anti-spasmodic activity both in males and female animal models .anti-fertility drugs are used for the prevention of the contraception, ovulation, fertilization and ovum implantation nothing but pregnancy. in other case anti-spasmodic drugs are used for the treatment of symptomatic cramping and embarrasses affecting smooth muscles from the gastrointestinal tract, biliary or genitourinary tract in a variety of clinical routes. The existing synthetic anti-spasmodic drugs may cause the serious unpleasant side effects. So, the discovery of new molecules of natural origin is an important goal for the pharmaceutical industry. This review was helping us to create a new innovation of medicinal plants which possess both anti-fertility and anti-spasmodic activity.

KEYWORDS: Medicinal plants, Anti-fertility, Anti-spasmodic activity.

INTRODUCTION

Birth control, also known as contraception, anticonception, and fertility control, is a method or device used to prevent pregnancy.[1] Birth control has been used since ancient times, but effective and safe methods of birth control only became available in the 20th century.[2] Planning, making available, and using birth control is called family planning.[3,4] The most effective methods of birth control are sterilization by means of vasectomy in males and tubal ligation in females, intrauterine devices (IUDs), and implantable birth control.[5] long-acting reversible birth control such as implants, IUDs, or vaginal rings are more successful in

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REVIEW ON HERBAL APPROACHES AND INVITRO AND INVIVO SCREENING METHODS OF ANTI-DIABETIC ACTIVITY

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Abstract:

Diabetes mellitus (DM), commonly known as just diabetes, is a group of metabolic disorders characterized by a high blood sugar level over a prolonged period of time. Symptoms often include fatigue, frequent urination, increased thirst and increased appetite. If left untreated, diabetes can cause many health complications. Acute complications can include diabetes ketoacidosis, hyperosmolar hyperglycaemic shock, or death. Serious long-term complications include cardiovascular disease, stroke, chronic kidney damage, foot ulcers, damage to the nerves, damage to the eyes and cognitive impairment.

Diabetes is due to either the pancreasnot producing enough insulin, or the cells of the body not responding properly to the insulin produced. There are three main types of diabetes mellitus: Insulin-dependent diabetes mellitus (IDDM) or juvenile diabetes-Type-1 diabetes, non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes-Type-2 diabetes, Gestational diabetes.

In this review we discussed about the various in-vitro and animal models for the screening of anti-diabetic activity. These methods include chemical, genetic, surgical manipulations relevant to the human diabetics. A brief description of Chemical causes of diabetes, virus induced diabetes, hormone induced diabetes and various other methods along with in-vitro techniques are explained.

Keywords: Fatigue, Ketoacidosis, Gestational Diabetes, Genetic Manipulations.

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INVESTIGATION OF *IN- VIVO* ANALGESIC AND *IN-VITRO* THROMBOLYTIC ACTIVITIES OF HYDRO ALCOHOLIC LEAF EXTRACT OF *Musa balbisiana*

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ABSTRACT

The plant under investigation (*Musa balbisiana*) was a giant monocotoyledenous herbs and belongs to the family Musaceae. The goal of our investigation was to determine whether the leaf extracts of this plant held any significant medicinal properties. Leaves of *Musa balbisiana* were extracted with hydroalcohol. The extracts and fractions were tested for phytochemical analysis, analgesic activity was evaluated employing the eddy's hot plate and thrombolytic activity was evaluated by the clot lysis test. The extract of all the fractions and streptokinase (standard) exhibited significant clot lysis. The hydro alcoholic leaf extract and fractions produced significant analgesic effects as evaluated. In the hot plate method the extract produced a significant ($p < 0.001$) dose dependent reduction of thermally induced pain. The overall results suggested that this plant deserves further investigation to isolate the active compounds which are responsible for these activities and to establish the mechanism of action.

KEYWORDS: Phytochemical, *Musa balbisiana*, Eddy's hot plate, Thrombolytic activity.

INTRODUCTION

Although the introduction of scientific study on herbal medicines is new but the use of herbal medicines has been gifted as a blessing to the mankind for its fewer side effects. In history plants have been used for medicinal purposes prevent when all these advanced technologies were not introduced. In the early 3000 BC ancient Chinese and Egyptian papyrus used herbal medicines for the betterment of health. Different cultures used herbs in different aspects of treatment and diagnosis. Many herbal plants are used for health beneficial in different region of world.[1]

Plants have been one of the rich and important sources of medicines since the dawn of human civilization. These are the gift of nature to the mankind for treating different types of diseases. Almost from prehistoric period, use of herbal medicine for alleviation of suffering caused by different diseases in human are well documented in India and other countries and even today they are in great use in these countries.

In recent years, medical science has experienced dramatic changes, and surprisingly, every year the global traditional herbal medicine market is growing, and it is anticipated that within 2050 this market will reach to 5 trillion dollars.

Pain has been defined by International Association for the Study of Pain (IASP) as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Failure to relieve pain is morally and ethically unacceptable. All these drugs carry potential toxic effects. Pain, pyrexia and inflammation act as a warning of external noxious stimuli and microbial invasion to the body. However, they are viewed as sources of discomfort and are commonly suppressed with analgesic medications respectively.[6] These conventional drugs may have various severe side effects. The major adverse reactions of ibuprofen, an analgesic, include the effects on the kidney, the gastrointestinal tract and the coagulation system.[7] Diclofenac, an analgesic and anti-inflammatory drug, is a known hepatotoxic drug in certain individuals and it also causes deposition of urate crystals in kidneys, liver, heart and spleen.[8] Sulindac causes serious gastrointestinal (GI).adverse effects including inflammation, ulceration, bleeding, stomach perforations, large and small intestines perforations, which can be fatal.[9] In addition to having the above side effects, the conventional drugs are expensive and have low efficacy.[10] Piroxicam increased the risk of bleeding in both acute and chronic therapy.[11] Opioids are the commonly used drugs for the management of acute postoperative pain.[12] One study suggests that

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OVERVIEW OF PHYTOCHEMISTRY AND PHARMACOLOGY OF SYZYGIUM AQUEUM

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ABSTRACT

In the last few decades there has been an exponential growth in the field of herbal medicine. Herbal medicines have been the basis of treatment and cure for various diseases and physiological conditions in traditional methods of practice such as Ayurveda, Unani and Siddha. Medicinal components from plants play an important role in conventional as well as western medicine. They were the sole source of active principles capable of curing man"s ailments. Thus natural products have been a major source of drugs for centuries. *Syzygium aqueum*, commonly called „water apple" belonging to the family Myrtaceae is a tropical, evergreen and low growing small tree. *Syzygium aqueum*, consisting of various fruit colors, is one of the plants that have been used as traditional medicine. The present review is an attempt to highlight the various ethanobotanical and traditional uses as well as phytochemical and pharmacological reports on *Syzygium aqueum*.

KEYWORDS: Syzygium aqueum, Bell fruit, Antioxidant, Chemical constituents.

1. INTRODUCTION

Medicinal plants are considered as an upscale resources of ingredients which may be utilized in drug development either pharmacopoeial, non-pharmacopoeial or synthetic drugs. A neighborhood from that, these plants play a critical role within the development of human cultures round the whole world. Moreover, some plants are considered as important source of nutrition and as a results of that they are recommended for his or her therapeutic values. The good interest within the use and importance of medicinal plants in many countries has led to intensified efforts on the documentation of ethnomedicinal data of medicinal plants.[1] S. Aqueum, commonly referred to as water apple, one among the foremost valuable medicinal plant species under the Myetaceae. In Ayurveda, the plant extract has been evidenced to be pharmaceutically active as anti hyperglycaemic activity, anti inflammatory activity, Anti oxidant activity ect. The medicinal activities of this genus are such a lot vigorous that a broader range of study is required to be completing to assess the whole pharmacological role in various ailments.

Fig: 1 Leaves of *Syzygium aqueum*

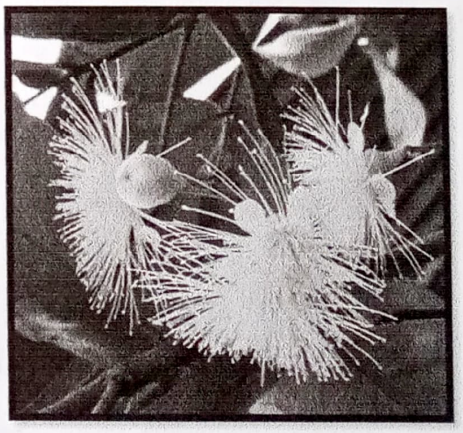

Fig: 2 Flowers of *Syzygium aqueum*

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Pharmacological Screening and Phytochemical Evaluation of Antidiabetic Activity of *Asparagasus Racemosus* Leaves in Normal and Alloxan-Induced Diabetic Rats

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ABSTRACT

Diabetes mellitus is the most common endocrine disorder, affecting more than 300 million people worldwide. These therapies developed along the principles of allopathic are often limited in efficacy, carry the risk of adverse effects, and are often too costly, especially for the developing world. To identify complementary or alternative approaches to existing medications, we studied the antidiabetic potential of leaves of *Asparagus racemosus*. The acute oral toxicity studies of the extracts revealed no toxic effects up to the levels of 2000 mg/kg body weight. The aqueous and alcoholic extracts of 20 and 30 mg/kg body weight of *A. racemosus* were screened for the presence of hypoglycemic and antidiabetic activity. In this study, diabetes was induced by a single intraperitoneal dose alloxan monohydrate in 72 h fasted rats. The fasting blood glucose level (FBGL) was carried on the 7th, 14th, and 21st, day and oral glucose tolerance test (OGTT) was measured on the 8th, 15th, and 22nd day. Glibenclamide was taken as the standard and the results are quite comparable with it. The studies were indicated that the leaves of *A. racemosus* are effective in the regeneration of insulin-secreting β-cells and thus possess antidiabetic activity. The aqueous and alcoholic extracts showed a significant effect in decreasing the FBGL and OGTT of rats and it's also showed good hypoglycemic activity in normal glycemic rats. The preliminary phytochemical analysis of the extracts of *A. racemosus* revealed the presence of alkaloids, tannins, saponins, terpenoids, flavonoids, phenolics, and glycosides as the possible biologically active principles.

Keywords: *Asparagus racemosus*, alloxan monohydrate, glibenclamide, fasting blood glucose level and oral glucose tolerance test

INTRODUCTION

Diabetes is one of the most common non-communicable diseases and a serious life-long condition appearing worldwide. The etiology of diabetes is a complex interaction of genetic and environmental factors. It is a heterogeneous group of metabolic disorders characterized physiologically by dysfunction of pancreatic beta cells and deficiency in insulin secretion or insulin activity and clinically by hyperglycemia or impaired glucose tolerance and other manifestable disorders. It is an endocrinological syndrome abnormally having high levels of sugar in the blood. This may be either due to insulin not being produced at all, is not made at sufficient levels, or is not as effective as it should be. Diabetes is still a serious health problem all over the world since it is associated with increased morbidity and mortality rate. When compared with the general population, mortality and morbidity increase in diabetes is mainly due to the associated chronic complications both specific (microvascular) and nonspecific (macrovascular). Since the disease prevails in both genders and all age groups, the general public has a concern about its control and treatment.[1]

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AN OVERVIEW OF ARTIFICIAL SKIN

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Abstract:

Background: *The skin is a multifunctional organ that is protective, self-healing and capable of sensing and many forms of artificial skins have been developed with properties and functionalities approximating those of natural skin.*

Objective: *Objective of this review article is about the different materials used for the preparation of artificial skin, skin grafting, skin bioprinting and manufacturing process of artificial skin.*

Study Selection: *In bioengineering process, the production of artificial skin substitute is increases gradually and at the same time the synthesis of keratinocytes by in vitro culture also. Artificial skin came to include products used for the clinical treatment of acute and chronic wounds as well as laboratory models for the study of the basic biology of the skin.*

Methods and Materials: *Different Biomaterials used in the preparation of Artificial Skin such as Collagen, PLGA, glucophage, Bovine type I collagen, HA, Chitosan. Two manufacturing process are commonly used, they are Mesh Scaffolding Method and Collagen Method.*

Skin Substitutes are classified in to three class such as Temporary and Impervious Dressing Materials, Single Layer Durable Skin Substitutes, Composite Skin Substitutes.

The first-class materials again classified in to two more types such as Single layer materials, Double layer materials produced by tissue engineering. Similarly, second class materials are classified in to epidermal substitutes, dermal substitutes. Class three composite skin substitutes classified in to Human skin substitutes, Produced by tissue engineering.

Conclusion: *The main study of this review article, includes the artificial skin technologies are to provide protection from infection, dehydration, and protein loss after severe skin loss or damage.*

Keywords: *Artificial Skin, Skin Bioprinting, Skin Substitutes, Biomaterials*

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A REVIEW ON ORGAN TRANSPLANTATION

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ABSTRACT

Organ transplantation is one of most successful advances in modern medicine. For patients with end stage disease, transplantation most often provides their only chance for survival. Recent advances in the fields of organ donation and organ transplant have introduced new hope for the treatment of serious diseases. However, this promise has been accompanied by several issues. One challenge that has remained from the outset is to overcome the shortage of suitable donor organs. The results of organ transplantation continue to improve, both as a consequence of the above innovations and the improvements in peri- and postoperative management. The most common issue raised is ethical implications, but in a multicultural society like Malaysia, additional concerns arise pertaining to social and religious issues. These concerns needs to be addressed as attitudes toward and acceptability of organ donation varies according to social, culture, and religion. The diverse cultural, religious, and traditional concepts pertaining to organ donation may hamper its acceptability and cause a lack of willingness to donate organs. The purpose of this article is to briefly explore the types of organ transplant, sources of donor organs, transplant rejection and transplant tourism.

KEYWORDS: Organ Transplantation, Transplant Rejection, Transplant Tourism, Organ Trafficking.

INTRODUCTION

Organ transplantation is a fortunate technique for substituting damaged organ from healthy and fit organ. Organs may be impaired due to injury or some other elements. At 18th century,

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AN OVERVIEW OF KABASURA KUDINEER SIDDHA MEDICINE FOR COVID- 19

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ABSTRACT

Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus. Most of the people infected with the corona virus will lead mild to moderate respiratory illness. Older people and those with underlying medical problems like cardiovascular disease, diabetes, and chronic respiratory disease are more likely to develop serious illness. Herbal medicines have been played an important key role in controlling infectious diseases. The scientific study on herbal medicines is new but the use of the herbal medicines has been gifted as blessing to the mankind for its fewer side effects. Plants have been one of the important sources of medicine since the dawn of human civilization. Kabasura kudineer is the best time-tested remedy from Siddha Medical system. This poly herbal Powder contains 15 herbs effective against viral infections, cough, fever and breathing difficulties. Each of its ingredients acted in a synergistic way to combat fever which is associated with respiratory tract illness. It Stimulates body immunity to fight against with Pathogens and also provides the antioxidant support to scavenge free radicals. Ministry of AYUSH has also endorsed Kabasura Kudineer is an immunity booster and preventive measure for Covid-19. In "Guidelines for Siddha Practitioners for COVID-19" the ministry has recommended consumption of decoction twice a day in the quantity of 60 ml, daily as a preventive measure. The present study was aimed the therapeutic efficacy of 15 herbs present in kabasura kudineer and the different usage of kabasura kudineer.

KEYWORDS: COVID-19, Corona Virus, Siddha Medicine, Kabasura Kudineer.

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RESEARCH ARTICLE

Antibacterial and Antifungal Activity of *Carica papaya* L Seed Extracts

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ABSTRACT:

Medicinal plants contain a richest source of antimicrobial agents. Medicinal plants are used in different countries and are sources of many powerful and effective drugs. Whole plant parts such as roots, fruits, bark, seeds and pulp of *Carica papaya* are known to have medicinal properties. It has been used for treatment of various diseases like eczema, warts, sinuses, cutaneous tubercles, dyspepsia, blood pressure, amenorrhoea and constipation. *Carica papaya* belonging to the Caricaceae family and it is a more important medicinal herb that is being used as a folk medicine for the treatment of numerous diseases throughout the world. *Carica papaya* (Papaya) seeds were extracted by soxhlet apparatus using ethanol, methanol and chloroform solvents. Antibacterial and antifungal activity of extracts with different concentrations (50, 100, 150µg/ml) was tested with three gram positive, three gram negative bacteria and two fungal organisms by agar disc diffusion method. Gentamicin and Fluconazole was used as standard drugs for antibacterial and antifungal activity respectively. Methanol and chloroform extracts produced greater zone of inhibition for gram negative microorganisms than ethanol extract. According to gram positive microorganism, ethanol and chloroform extracts produced more zone of inhibition (10 -15mm) than methanol extract. *Candida albicans* produced 15, 16mm zone of inhibition in the concentration of 150µg/ml of chloroform and methanol extracts respectively. Similarly, *Aspergillus niger was* produced 11, 13 mm zone of inhibition in 150µg/ml of methanol and chloroform extracts respectively. From these studies, it is concluded that *Carica papaya* seed extracts possess very good antibacterial and antifungal activity in both methanol and chloroform extracts. Further it is recommended to isolate of active constituents responsible for these activities.

KEYWORDS: *Carica papaya* seed extracts, antibacterial, antifungal, Zone of inhibition.

INTRODUCTION:

Antibacterial are the substances which can effectively cure the infections caused by the different types of bacteria. The frequency of life threatening diseases caused by the micro-organisms has increased throughout the world and is becoming a main reason of mortality and morbidity in developing countries[1]. The antibacterial properties of several medicinal substances have been analyzed by a number of studies worldwide and many of them substances have been used as therapeutic alternatives because of their very good medicinal properties[2]. Plant based antimicrobials have more therapeutic effect with lesser side effects[3].

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Papaya belongs to a family of Caricaceae having four different genera in world. The genus *Carica* L. is represented by four types of species in India, of which *Carica papaya* L. is the most widely cultivated and the best-known species[4].

It is commonly known as Pawpaw, Tapayas, Papaya Melon tree, Kapaya, Papyas, Papye, papita, papayabaum and papaya[5]. Papaya is basically originated from southern Costa Rica and Mexico, then introduced in to Sri Lanka, Australia, South Africa, Hawaii, Philippines and India all tropical and subtropical regions. It is growing both commercially and in home garden[6].

Carica papaya tree is an erect, fast-growing tree measuring 7 - 8m tall, with copious latex and trunk of about 20cm in diameter[7]. Its leaves are soft, lobulated, clustered, long-petiolated and measuring up to 80cm long. Its fruit is a greenish-orange berry about 7.5cm long and bitter in wild types, up to 45cm long with flesh

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A Review on MUSA

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ABSTRACT

Banana is commonly a fruit but technically, a berry. The genus Musa of herbaceous plants produces this universally consumed fruit. It is suitable for consumption by people of any age group and so, is one of the world's most important food producers. Banana offer great medical benefits. This is partly because bananas aid in the body's retention of calcium, nitrogen and phosphorus, all of which work to build healthy and regenerated tissues. It has a rare combination of energy value, tissue-building elements, protein, vitamins and minerals. It is a good source of calories since it is rich in solids and low in water content as compared to any other fresh fruit. Banana is one of the most important gigantic and oldest cultivated fruit crops grown almost everywhere in India. Presently, the banana pseudostem is hazardous waste in India while it has been used in several countries to develop important bio-products such as fibre to make yarn, fabric, apparel as well as fertilizer, fish feed, bio-chemicals, paper, handicrafts, pickles, candy, etc. Looking at this perspective, entrepreneurs of India should take this golden opportunity and do the needful for such kind of business. The land of our country is suitable for banana production. Its fruit is a healthy diet and demandable in local markets as well as the free waste could be utilized to produce such bio-products which will contribute directly in our national economy. Thus, farmers or entrepreneurs should cultivate more banana trees in unproductive lands of coastal and hilly areas for extra income from the useless wastes and ensure eco-friendly environment. Women can also be employed in production of different bio-products from banana wastes and thus, they can contribute to their livelihood improvement. In conclusion, this review on Musa possess various phytochemicals and it is having important pharmacological activity which can help in improving various health problems and waste utilization will be of help to the farmers, entrepreneurs, planners, scientists as well.

Keywords: Musa, Phytochemical, Uses, Pseudostem, bio-products, employment, eco-friendly, health care

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CONTENTS:

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EVALUATION OF STARCH ACETATE: A NEW STARCH BASED POLYMER FOR CONTROLLED RELEASE OF DICLOFENAC SODIUM

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Starch acetate, Matrix tablets, Controlled release and Non-Fickian diffusion.

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ABSTRACT

The objective of the present investigation is to synthesize starch acetate, a new starch based polymer and to evaluate its application in controlled release (CR) in the design of Diclofenac sodium controlled release tablets. Starch acetate prepared by reacting potato starch with acetic anhydride in the presence of sodium hydroxide at elevated temperatures was insoluble in water and has poor swelling and gelling property when heated in water. In the micromeritic evaluation, the angle of repose and compressibility index values revealed the excellent flow characteristic of starch acetate prepared. All the physical properties studied indicated that starch acetate is a promising pharmaceutical excipient in tablets. Diclofenac Sodium, a widely prescribed anti inflammatory analgesic drug belongs to BCS class II and exhibit variable oral bioavailability due to its poor solubility and dissolution rate. Matrix tablets of Diclofenac Sodium (100 mg) prepared employing starch acetate as matrix former in different proportions gave slow and controlled release more than 12 hr. Diclofenac Sodium release was diffusion controlled and dependent on percentage of starch acetate. As the polymer concentration was increased, release rate was decreased. Good linear relationship was observed between percent polymer and release rate (K_0). Thus drug release from the matrix tablets could be controlled by varying the proportion of drug: polymer in the matrix.

INTRODUCTION

Oral drug administration has been the predominant route for drug delivery. It is known to be the most popular route of drug administration due to the fact the gastrointestinal physiology offers more flexibility in dosage form design than most other routes. A major challenge for the pharmaceutical industry in drug development is to produce safe and efficient drugs, therefore properties of drugs and the way in which they are delivered must be optimised. A controlled release drug delivery system delivers the drug locally or systemically at a predetermined rate for a specified period of time. The goal of such systems is to provide desirable delivery profiles that can achieve therapeutic plasma levels.

Drug release is dependent on polymer properties, thus the application of these properties can produce well characterised and reproducible dosage forms. The primary mechanism of drug release from hydrophilic matrices occurs when the polymer swells on contact with the aqueous medium to form a gel layer on the surface of the system. The drug then releases by dissolution, diffusion and/or erosion[1]. Diclofenac sodium is a non steroidal anti inflammatory (NSAID) drug that reduces pain and inflammation. It has poor aqueous solubility, short biological half life (2 hours) and undergoes excessive first pass metabolism. So it is prescribed 2-3 times / day, which leads to poor patient compliance. Present studies

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AN OVERVIEW ON *IN-SITU* GELLING SYSTEM

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Abstract:
In recent times in-situ gel systems have emerged as an alternative approach to conventional drug delivery systems. These systems release the drug in a controlled manner by its special feature of 'Sol to Gel' transition. Further, this in-situ gelling system will stay as a solution before administering into the body and convert into a gel post administering into the body due to various physiological conditions. The drawbacks associated with conventional systems of both solutions and gels, such as accurate dosing, ease of administration overcome by using in situ gelling systems. The current review is mainly focused on giving a special emphasis on types, advantages, disadvantages, polymers used in the formulation, preparation of an in-situ gel, approaches, evaluations, and biomedical applications.

Keywords: In-situ gel; Polymers; Controlled Release; Drug delivery; Gelling Mechanism

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REVIEW ON EMULGEL A NOVEL APPROACH FOR TOPICAL DRUG DELIVERY SYSTEM

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Abstract:
Emulgel is currently attracting researchers for its potential as a drug delivery system by loading a broad range of drug molecules. Emulgel is formed by incorporating either o/w or w/o emulsion in a gel base formed by a gelling agent. By incorporating emulsion into a gel enhances the stability and makes it a dual control release system. When compared with other topical drug delivery systems emulgel shows better drug release and enhanced patient compliance due to the presence of soluble excipients. The current review gives an overview of ideal properties with special emphasis on the formulation and evaluation of emulgel.

Keywords: Emulgel; Emulsion; Gelling agent; Dual controlled release; Topical agents

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A REVIEW ON NOVEL STRATEGIC APPROACHES FOR COLON TARGETED DRUG DELIVERY SYSTEMS

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ABSTRACT

In recent time's colon targeted drug delivery systems have gained a lot of attention from researchers as a potential alternative to conventional oral drug delivery to treat lower GI tract disease like ulcerative colitis, cirrhosis disease, amoebiasis, colonic cancer, local treatment of colonic pathologies, and systemic delivery of proteins & peptide drug by protecting from the gastric contents of the upper GI tract. Further, these colon-targeted drug delivery systems provide better patient compliance at lower costs. To improve the drug targeting efficacy to the colon different strategies have been explored like pH and time-dependent, prodrug, microbial triggered drug delivery, pressure-controlled drug delivery, pulsatile drug delivery system, osmotic controlled drug delivery system, etc. In the current review, an attempt has been made to give an overview on anatomy and physiology of the colon, various factors affecting the colon drug delivery systems, traditional approaches to deliver the drug to the colon, and recent advancements in delivering the desired drug to colon and their applications by giving a special emphasis on novel formulation technologies.

KEYWORDS: Colon; Targeted Drug Delivery; Lower GI tract; Colonic Cancer; Sustained drug delivery.

INTRODUCTION

A targeted drug delivery system aims to deliver the desired drug to the target site efficiently. Further, drugs that are poorly soluble, highly unstable, and having a huge volume of distribution, poor absorption, and less therapeutic window require these targeted drug delivery. Targeting the drugs to a specific site can maximize the therapeutic activity and also

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A REVIEW ON MICROSPONGES: AN ALTERNATIVE STRATEGY FOR DRUG DELIVERY SYSTEM

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ABSTRACT

Microsponge drug delivery system (MDDS) is considered a unique technology to deliver the drug in a controlled manner. These drug delivery systems can also be referred to as polymeric systems with desired drugs loaded in porous microspheres and delivered in the form of gel, cream, liquid, and powder. Further, these are tiny sponge-like spherical particles with a size of 5-300 μm and with a large porous surface. These drug delivery systems possess various advantages like effective delivery of the loaded drug to the target site, stability enhancement, reduced incidence of side effects, and a sustained drug release. In addition, various studies had proved that MDS is non-irritating, non-allergic, and non-toxic. MDS technology facilitates the controlled release of active drugs into the skin to reduce systemic exposure and minimize local cutaneous reactions. These micro-sponges are used mostly for topical use and recent studies suggested that they can also be used for oral administration. The current review focus on history, advantages, limitations, preparation, evaluation, and biomedical applications of micro-sponges.

KEYWORDS: Microsponge; Controlled drug delivery; Topical Drug Delivery; Biomedical application.

INTRODUCTION

Micro-sponges are polymeric delivery systems composed of porous microspheres. They are tiny sponge-like spherical particles with a large porous surface (10-25 μ). Microsponge drug delivery system (MDDS) is a patented, highly cross-linked system and considered a novel technique to deliver the drugs to the targeted site in a controlled manner. In addition, this

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A Review on Sustained Release Matrix Type Drug Delivery System

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HUMAN

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Keywords: Controlled release, extended-release, *in-vitro* dissolution, matrix tablet, polymers

ABSTRACT

Oral ingestion is the most convenient and commonly employed route of drug delivery due to its ease of administration, least aseptic, and flexibility in the design of dosage form. The objective of the study was to explore the necessity, advantages, and various techniques of extended-release matrix tablets to get a constant drug delivery rate and reproducible kinetics for advance delivery. This article highlights advantages, disadvantages, rationale for development, polymers used in sustained delivery, methods of preparation, classification of matrix tablets and evaluation of matrix tablets. The extended-release matrix tablets can assure better patient compliance through a reduction in total dose and dosage regimen, which can be a great help to treat chronic diseases.

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Floating Drug Delivery Systems: A Review

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ABSTRACT

Oral drug delivery is the most widely utilized route of administration among all the routes that have been explored for the systemic delivery of drugs via various pharmaceutical products of different dosage forms. Technological attempts have been made in the research and development of rate-controlled oral drug delivery systems to overcome physiological adversities, such as short gastric residence times (GRT) and unpredictable gastric emptying times (GET). Floating drug delivery systems are of particular interest for drugs that are locally active and have a narrow absorption window in the stomach or upper small intestine, unstable in the intestinal or colonic environment, and exhibit low solubility at high pH values. This review article summarizes advantages, limitations, polymers used in floating systems, factors affecting floating systems, approaches to design floating systems, evaluation, and applications. These systems are useful to overcome several problems encountered during the development of a pharmaceutical dosage form.

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SOLID DISPERSION: STRATEGY TO ENHANCE SOLUBILITY

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Abstract:

Solid dispersion is defined as dispersion of one or more active pharmaceutical ingredient in a carrier at solid state and an efficient technique to improve dissolution of poorly water-soluble drugs to enhance their bioavailability. Solid dispersions have attracted considerable interest as an efficient means of improving the dissolution rate and hence the bioavailability of a range of poorly water-soluble drugs. Solid dispersions of poorly water-soluble drugs with water-soluble carriers have been reduced the incidence of these problems and enhanced dissolution. The focus of this review article on advantages, disadvantages, types and the method of preparation and characterization of the solid dispersion and various types of marketed preparations.

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NANOSUSPENSION TECHNOLOGY: A REVIEW

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Abstract:

Solubility is the crucial factor for drug effectiveness, independence of the route of administration. Large proportions of newly discovered drugs are water insoluble, and therefore poorly bioavailable contributing to deserted development effort. These so-called 'Brickellia' candidates can now be delivered by formulating them into Nanosuspension. Nanosuspension technology solved the problem of drugs which are poorly aqueous soluble and less bioavailability. Stability and bioavailability of the drugs can be improved by the Nanosuspension technology. Preparation of Nanosuspension is simple and applicable to all drugs which are aqueous insoluble. Nanosuspensions are prepared by using wet mill, high pressure homogenizer, emulsion-solvent evaporation, melt emulsification method and super critical fluid techniques. Nanosuspension can be prepared by using stabilizers, organic solvents and other additives such as buffers, salts, polyols, osmogent and cryoprotectant. Nanosuspensions can be delivered by oral, parenteral, pulmonary and ocular routes. Nanosuspensions can also be used for targeted drug delivery when incorporated in the ocular inserts and mucoadhesive hydrogels.

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VARIOUS TECHNIQUES FOR SOLUBILITY ENHANCEMENT: AN OVERVIEW

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ABSTRACT

The success of formulation depends on how capably it makes the drug available at the site of action. Therapeutic effectiveness of a drug depends upon the bioavailability which ultimately depends upon the solubility of drug molecules in case of oral formulations. So, solubility enhancing techniques like co-solvency, hydrotropy, co-crystallisation, salt formation, change in pH, addition of solubilizing agent, micronization, complexation, modification of crystal habit, solid dispersion have to be used to enhance solubility of poorly soluble drugs. The intention of this article is to describe the solubilisation techniques for improving bioavailability of poorly soluble drugs.

KEYWORDS

Soluble drugs, Techniques and Enhancing techniques.

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INTRODUCTION

The therapeutic effectiveness of any drug depends upon its bioavailability and thus ultimately upon the solubility of those drug molecules. Solubility is important parameter to attain the desired concentration of drug in the systemic circulation to prove its pharmacological response. The solubility of a solute is defined as the maximum quantity of solute that can dissolve in a certain amount of solvent at a specific temperature. The solubility is defined as the capability of one substance to form a solution with another substance. The substance which is to be dissolved is called the solute and the dissolving fluid in which that solute dissolves is

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LIQUISOLID: A NOVEL SOLUBILITY ENHANCEMENT TECHNIQUE

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Liquisolid, Bioavailability, Wettability, Carrier and Sustained Release

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ABSTRACT

Liquisolid (LS) technique is a novel concept in which drug is loaded with liquid vehicles like non volatile solvents it improves the wettability and dispersion of drug in the formulation and leads to enhance solubility. This technique is suitable for poorly soluble or water insoluble drugs, highly permeable drugs (BCS Class II drugs) and also for immediate or sustained release formulations. The design of liquisolid systems are mainly intended for enhancement of solubility, dissolution rate and bioavailability of poorly water-soluble and highly lipophilic drugs. Improvement in bioavailability may be due to increased surface area, increased aqueous solubility and increased the wettability of the drug. Liquisolid technique also has the potential to be optimized for the reduction of drug dissolution rate and thereby production of sustained release systems. Overall, liquisolid technique is a most promising and novel technique for enhancing the dissolution and bioavailability of poorly water soluble drugs and sustaining drug release from tablet matrices. The current review mainly focuses on different carriers, solvents and coating materials employed in liquisolid technique. Literature reports on the applicability of liquisolid compact techniques over a wide range of pharmaceutical formulations are also explicated.

INTRODUCTION

There are various drugs present in the market with poor solubility which leads to poor dissolution & bioavailability so thereby solubility is one of the rate limiting factors in the development of new drugs. Solubility is one of the important parameters to achieve desired concentration of drug in systemic circulation for pharmacological response to be shown. Poorly water soluble drugs will be inherently released at a slow rate owing to their limited dissolution rate within the gastrointestinal tract (GIT) contents. One challenge for poorly water soluble drugs is to enhance the rate of dissolution. Various techniques have been employed to formulate oral drug delivery system that would enhance the dissolution profile [1]. Solid dispersions, micronization, use Of mesoporous silica carriers, ball milling technique, use of complexing agents, crystal engineering, solubilization by surfactants and liquisolid (LS) technique developed. These techniques take advantage of the increased dissolution rate resulting from the addition of a solubilizing agent, particle size reduction or the drug being in an already dissolved or amorphous state. LS technique has been identified as a promising technique to improve the dissolution rate of poorly water soluble drugs[2]. When properly formulated, LS powder blends possess acceptable flowability and compressibility properties. They are prepared by simple blending with selected powder excipients referred to as the carriers and the coating materials. This technique was successfully applied for low dose poorly water soluble drugs. Drug can be present in a

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FORMULATION AND CHARACERTISATION OF CINNARIZINE FLOATING MICROSPHERES USING IONOTROPIC GELATION METHOD

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Floating microspheres, Cinnarizine, HPMC K100M, Floating time and *In-vitro* drug release.

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ABSTRACT

The objective of present work was to prepare a floating drug delivery system of Cinnarizine in order to increase the gastric residence time for enhance solubility in gastric fluid, because of cinnarizine have lower solubility in intestine. Floating microspheres were prepared by ionotropic gelation method using HPMC K100M and HPMC-K4M as polymer, sodium bicarbonate and calcium carbonate as gas generating agent. The floating microspheres were evaluated for flow properties, particle size, incorporation efficiency, as well as in-vitro floatability and drug release. The shape and surface morphology of the microspheres were characterized by optical and scanning electron microscopy. The *in vitro* drug release was carried out in 0.1N HCL for 12 hrs. The drug release kinetic was fitted in different mathematical models like- zero order, first order, higuchi and peppas model. Amongst all the formulations, F4 and F10 were found to be better formulations F4 contains 1:4 ratio of drug & Polymer (HPMC K-100) and 40 mg of sodium bicarbonate. F10 contains 1:5 ratio of drug 7 Polymer (HPMC K4M) and 50 mg of calcium carbonate. Among these two formulations F4 having good percentage of drug loading. The *in vitro* drug release showed 100.02% at 12 hrs. Thus, it may be concluded that the cinnarizine floating tablet can be successfully formulated for improve absorption of cinnarizine with increase in the gastric residence time.

INTRODUCTION

The development of oral controlled release drug delivery system (OCRDDS) by overcoming physiological adversities like short gastric residence time and unpredictable gastric emptying time is a challenge for today's scientist. One of the most feasible approaches for achieving a prolonged and predictable drug delivery in the GI tract is to control the gastric residence time (GRT). Gastro retentive drug delivery systems (GRDDS) are the systems which are retains in the stomach for a prolonged period of time and thereby improve the bioavailability. GRDDS extend significantly the period of time over which the Drugs will be released. They not only prolong dosing intervals, but also increase patient compliance beyond the level of existing controlled release dosage forms[1]. The gastric retention of the dosage forms can be achieved by several methods such as floatation, mucoadhesion, swellable system, hydro dynamically balanced system, sedimentation, expansion modified shape systems, and so on. Out of the techniques, floatation is the convenient and effective method for the gastric retention. Floating drug delivery systems (FDDS) can be buoyant in the gastric medium for prolonged period of time due to its lower

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RESEARCH ARTICLE

Development and Characterization of Chitosan based flutamide Nanoparticles by Ionic Gelation Method

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ABSTRACT:

Aim and Objective: The aim of the study was to develop Flutamide loaded chitosan - sodium tripolyphosphate (STPP) nanoparticles using Ionic gelation method and characterization of their physicochemical properties and *in-vitro* release studies. The objective was to fabricate chitosan based nanoparticles for better controlled and targeting action of drug, which also overcome the problems associated with conventional formulations like multidose therapy, poor patient compliance and high cost. **Materials and Methods:** Flutamide loaded chitosan nanoparticles (F1 to F6) were prepared by Ionotropic gelation method. The formulated nanoparticles were evaluated for external morphological characters, particle size analysis, zeta potential, drug content, entrapment efficiency and *in-vitro* release studies. **Results:** The particle size varied from 148 to 317nm and zeta potential was in negative and its value found to be - 46.4mV. The drug content for the Flutamide loaded chitosan nanoparticles varied from 69.5±7.2% to 87.9±1.2%. The entrapment efficiencies were found to be minimum and maximum of 55.50±2.4% and 86.30±3.6%. The percentage yields of all formulations were in the range of 48.24 ±1.24 to 86.13±1.37%. *In-vitro* release of drug showed sustained release behaviour for a period of 24 hr. **Conclusion:** The optimized formulation contains 3:1 ratio of chitosan and STTP and demonstrated successful sustained release. Flutamide loaded chitosan nanoparticle is a potential new delivery system for treatment of prostate cancer.

KEYWORDS: Prostate Cancer, Chitosan nanoparticles and Ionic gelation method.

INTRODUCTION:

Flutamide is a potent nonsteroidal anti androgen that is used in the treatment of advanced prostate cancer. It blocks the androgen receptors on the cancer cells and inhibits the androgen dependent cell growth. The usual oral dose of flutamide is 250 mg three times daily. Its oral absorption is rapid and it attains peak plasma concentration in 1 h after a single dose[1]. The drug has high first pass hepatic metabolism and low elimination half life (5-6 h). Low functionality of flutamide is due to its rapid metabolism, less active metabolites (hydroxyl flutamide) and low bioavailability. Low bioavailability may be due to its poor wetability and low aqueous solubility. Moreover high dose of Flutamide produces hepatotoxicity. Treatment with flutamide may cause a variety of side-effects including diarrhea, tiredness, impotence, enlargement of male breast and liver malfunction. In order to decrease the frequency of drug administration and also the incidence of adverse effects, a sustained release formulation of flutamide is desirable. Preparation of nanoparticles is a method that makes it possible to increase the bioavailability, reduce the incidence and severity of adverse effects, especially gastrointestinal disorders and hepatic impairment[2].

Nanoparticles are defined as particulate dispersions or solid particles with a size in the range of 10 - 1000nm[3]. Due to large surface to volume ratio, the nano-scale structures have unique properties and dissolution behaviours which are expected to avoid the unwanted side effects. Sustained release of the drug from the

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RJPT

RESEARCH ARTICLE

mPEG-PCL Nanoparticles as New Carriers for Delivery of a Prostae Cancer Drug Fluamide

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ABSTRACT:

The present work was aimed to prepare and evaluate Flutamide loaded methoxy poly (ethylene glycol) poly caprolactone (mPEG–PCL) nanoparticles for targeted delivery to the prostate cancer. The nanoparticles (NPs) were prepared by 2^3 factorial design and nanoprecipitation method. Various trials were evaluated for surface morphology, particle size and zeta potential. The influences of three formulation excipients such as polymer, stabilizer and organic phase volume on the characterization of NPs were investigated. The results of fourier transform infrared (FTIR) studies were indicated no interaction between the drug and polymer. The particle size varied from 79.2 to 89.1 nm and zeta potential value was found to be - 41.5 mv. The surface morphology of NPs was observed using scanning electron microscopy (SEM) and understands the arrangement and orientation of NPs to determine its behavior and stability. Flutamide loaded mPEG–PCL nanoparticle is a potential new carrier system for treatment of prostate cancer, which may overcome the problems associated with conventional formulations such as tablets.

KEYWORDS: Nanoparticles, Targeted delivery, Zeta potential and prostate cancer.

INTRODUCTION:

Polycaprolactone (PCL) is observed to possess good biodegradability and biocompatibility which are essentially made use of in controlled drug delivery and tissue engineering applications in various formulations [1]. It has compatibility with a variety of drugs which ensures uniform drug distribution in the formulation matrix and as it does not degrade for much time, drug release is facilitated up to many days. As a result of its very low Tg (-61°C) and a low Tm (65°C), which retards the biodegradation and sometimes becomes an obstacle in some applications [2].

Synthesis of PCL occurs by ring-opening polymerization of caprolactone (CL) monomers. The high olefin content gives it high degree of hydrophobicity and crystallinity resulting in the slow degradation and as such, becomes less biocompatible with soft tissues, which restricts its further clinical application/s [3]. Therefore, PCL is usually blended or modified as copolymer.

The amphiphilic block copolymers are observed to possess a range of combinations of hydrophobic and hydrophilic block unimers. The variation in unimer ratio alters the surface and also the micelle forming properties of the copolymer. These nanoscopic micelles possess the capacity to encapsulate hydrophobic compounds and function as potential drug carriers. The copolymers are synthesized to enhance the rate of bioabsorption. For instance, copolymers of ϵ caprolactone with methoxy polyethylene glycol are observed to yield more flexible materials with higher degradation rates than that of polycaprolactone [4]. The high permeability of Methoxy poly (ethylene glycol) Poly caprolactone (m-PEG PCL)

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REVIEW ARTICLE

Flutamide Loaded polymeric Nanoparticles for prostate Cancer: A Review

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ABSTRACT:

Flutamide is a potent nonsteroidal anti androgen used to treat advanced prostate cancer. It blocks the androgen receptors on the cancer cells and inhibits the androgen dependent cell growth. This work was planned to compile the research work available in the scientific publications in the formulation and evaluation of Flutamide loaded polymeric nanoparticles for the treating the prostate cancer including the study of influence of various formulation components such as polymer concentration, organic phase volume, drug content, stabilizer concentrations and the ratio between aqueous to organic phase in the characteristics of nanoparticles. Literature study revealed that, methods like Ionic Gelation Technique, Solvent Evaporation method and Nanoprecipitation have been utilized and polymers like Chitosan, casein, Methacrylic acid, PHEA-IB-p(BMA) graft copolymer, mPEG – PLGA and PVA have been utilized. The drug loaded polymeric nanoparticles were evaluated for their physiocochemical properties along with characterization with FTIR, in vitro release and in vitro and in vivo anticancer potential. From the literature it was understood that, nanoprecipitation method was the most commonly used method in various research perspectives. Based on the findings of the present review, Flutamide loaded polymeric nanoparticles may be used as an treatment adjunctive for prostate cancer.

KEYWORDS: Flutamide, Nanoparticles, Prostate Cancer and Nanoprecipitation.

INTRODUCTION:

Prostate cancer is found to be the sixth leading cause of death among men worldwide and it is expected to grow to 1.7 million new cases and 4,99,000 new deaths by 2030 due to the growth of global population [1]. It is ranked fourth among the typically observed cancers in both sexes and occupies the second place among the cancers found only among men [2]. Globally, among three fourth of the cases registered during the last decades of the 20th century, prostate cancer is identified as the major health problem [3]. Consequently, the incidence rate of prostate cancer is observed to vary by 25 fold in various parts of the world. It is found to be low in Asian and North African countries, and the range varies from 1 to 9/1,00,000 individuals [4]. Demographic and epidemiological transitions in India have confirmed a rise in the growth of various cancer cases inclusive of prostate cancer.

Flutamide is a potent nonsteroidal anti androgen that is used to treat the advanced state of prostate cancer. It blocks the androgen receptors on the cancer cells and inhibits the androgen dependent cell growth. The usual dose of flutamide tablets is 250mg three times a day [5, 6]. Its absorption is rapid on oral administration and it attains peak plasma concentration in 1 h after a single dose. The drug has high first pass hepatic metabolism and low elimination half life (5-6h). It is less functional due to its rapid metabolism and less active metabolites (hydroxyl flutamide) [7]. Its bioavailability is less due to its poor wetability and aqueous solubility [8]. Moreover high dose of Flutamide produces hepatotoxicity. Treatment with flutamide may lead to a variety of side-effects which include diarrhea, tiredness, impotence, enlargement of male breast and liver malfunction [9]. In order to decreasing adverse effects and the frequency of drug administration, a sustained release formulation of flutamide is desirable. Hence, the formulation of Flutamide with high plasma half-life, slow and constant release which can deliver to the target tissue is important. The preparation of flutamide nanoparticles

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FORMULATION AND IN VITRO EVALUATION OF VILDAGLIPTIN FLOATING TABLETS

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Abstract:

The main aim of the present work was to formulate and evaluate Vildagliptin floating tablets. Vildagliptin is an orally active antihyperglycemic agent that selectively inhibits the dipeptidyl peptidase-4 (DPP-4) enzyme. It is used to manage type II diabetes mellitus, where GLP-1 secretion and insulinotropic effects are impaired. The present research work was aimed to design, develop and evaluate floating tablets containing Vildagliptin for controlled release by direct compression method. Various proportions of polymer such as HPMC K 100M was used in all formulations. Optimization of formulation was done by studying effect of drug to polymer ratio on drug release. FT-IR studies indicated absence of any interaction between Vildagliptin and polymer (HPMC K 100M) and excipients. Six formulations were prepared and formulation F6 possessed good floating property with total floating time more than 12 hours. The tablets were also evaluated for its hardness, friability, buoyancy time and In-Vitro drug release test. All parameters complied with IP limits. The optimized formulation was found to be F6 which released 82.88% of drug in 12 h in vitro, *while the buoyancy time was 1.16 min. The optimized formulation followed first-order kinetics and Higuchi's model in drug release.*

Key words: *Floating drug delivery, Vildagliptin, HPMC K100 M, Buoyancy, Controlled release*

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FLOATING DRUG DELIVERY SYSTEM: AN OVERVIEW

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ABSTRACT

In recent years scientific and technological advancements have been made in the research and development of rate-controlled oral drug delivery systems by overcoming physiological adversities, such as short gastric residence times (GRT) and unpredictable gastric emptying times (GET). Several approaches are currently utilized in the prolongation of the GRT, including floating drug delivery systems (FDDS), also known as hydrodynamically balanced systems (HBS), swelling and expanding systems, polymeric bioadhesive systems, modified-shape systems, high-density systems, and other delayed gastric emptying devices. The different strategies used in the development of FDDS by constructing the effervescent and noneffervescent type of floating tablets basis of which is buoyancy mechanism. FDDS is a method to deliver the drugs that are active locally with a narrow absorption window in the upper gastrointestinal tract, unstable in the lower intestinal environment, and possess low solubility with higher pH values. The recent developments in floating drug delivery systems are containing the physiological and formulation variables impacting on gastric retention time, approaches to formulating of single-unit and multiple-unit floating systems, and their classification and formulation aspects are discussed in detail. This review also summarizes evaluation parameters and application of floating drug delivery systems.

KEYWORDS: Floating drug delivery systems (FDDS), Gastric residence time, Swelling index, Buoyancy.

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A BRIEF OVERVIEW ON MICRONEEDLES

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Abstract:

Transdermal drug delivery carried out a promising carrier in the transport of drugs to get direct access across the skin deep into the systemic circulation. Transdermal drug delivery has a number of advantages including improved patient compliance, sustained release, avoidance of gastric irritation, as well as elimination of pre-systemic first-pass effect. It gives attraction to many researchers due to various biomedical advantages. Due to the limitation of oral drug delivery system and the pain related with the use of needles in case of injections, drug delivery research has tremendously oriented towards the transdermal route. The objective of the present review is to focus on newly innovations in transdermal drug delivery systems which can create a platform for the research and development of pharmaceutical drug dosage form for efficient transdermal delivery. In this review, we tell about different types of microneedles are described and their methods of fabrication. Microneedles can be fabricated in different forms like hollow, solid, and dissolving. There are also hydrogel-forming microneedles. In relation to hydrogel-forming microneedles, special attention, these are innovative microneedles which does not contain drugs but imbibe interstitial fluid to form continuous conduits between dermal microcirculation and an attached patch-type reservoir. Regulatory authorities approved several microneedles for clinical uses are also examined. The last part of this review discusses concerns and challenges regarding microneedles use.

Key words: transdermal drug delivery, microneedles, patient compliance, avoid first pass effect.

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Research Article

FORMULATION DESIGN AND IN VITRO EVALUATION OF VILDAGLIPTIN MUCOADHESIVE MICROSPHERES

A. V. S. Himabindu*[1], M. Manasa[1], N. Neeraja[1], M. J. L. Manasa Reddy[1], B. Umadevi[1], S. Umamaheswari, K. Padmalatha[2]

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Abstract:

The main aim of the present work was to formulate and characterize oral sustained release mucoadhesive microspheres of Vildagliptin. Vildagliptin is a dipeptidyl peptidase IV (DPP-IV) inhibitors used in the management of diabetes. This drug also undergoes first-pass metabolism. To overcome this problem Vildagliptin mucoadhesive microspheres were developed to control the release rate of the drug and target to the specific site of the body to make an enormous impact in the formulation and development of novel drug delivery system and also improve efficient absorption and enhances oral bioavailability of the drug due to high surface to volume ratio. It also provides an intimate contact of the drug delivery system to the absorbing mucous membrane for sustaining the drug action. This is a new oral drug delivery system which was developed and utilized both the concepts of sustained release and mucoadhesiveness in order obtain a unique drug delivery system which could remain in intestine and control the drug release for longer period of time.

Key words: mucoadhesive, bioavailability, sustained release

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A REVIEW ON MOUTH DISSOLVING FILMS

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ABSTRACT

Mouth dissolving film is the most advanced oral solid dosage form due to its flexibility and easy to use. Mouth dissolving films dissolve and disintegrate within a minute when placed in mouth without taking water or chewing. This dosage form allows the medication to bypass the first pass metabolism so bioavailability of drug may be improved. Mouth dissolving film has potential to rise onset of action decreases the dosing and eliminate the fear of chocking. Formulation of mouth dissolving films involves both the visual and characteristics as plasticized hydro colloids. API taste masking agents are being laminated by solvent casting and semisolid casting method. Solvent casting method being the most preferred method over other methods because it offers great uniformity of thickness and films prepared having fine glossy look and better physical properties. Mouth dissolving films are evaluated for its various parameters like thickness, physical property like folding endurance, disintegration and dissolution time. This review gives an idea about formulation techniques, evaluation parameters and some available marketed products of mouth dissolving film.

KEYWORDS: Mouth dissolving films, solvent casting, fast disintegration.

1. INTRODUCTION

Oral route of drug administration is a most preferred route due to its ease of administration, non-invasiveness, adaptability, patient compliance and acceptability. Regarding oral route of drug administration, many substitutes have continuously been presented by using recent novel technologies for pediatrics, geriatrics, nauseous and non-compliance patients.

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A COMPREHENSIVE REVIEW ON CO-CRYSTALS

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Abstract:

Poor aqueous solubility and low oral bioavailability of an active pharmaceutical ingredient are the limitations during the growth of a new product. Co-crystal formation is a new approach to enhance the physicochemical properties of the active pharmaceutical ingredient. Co-crystallization with pharmaceutically acceptable compounds does not affect the pharmacological activity of the API but can improve the physical properties like solubility, stability and dissolution rate. Cocrystals are multi-component system of active pharmaceutical ingredient with a stoichiometric amount of a pharmaceutically acceptable coformer included within the crystal lattice. By manufacturing pharmaceutical co-crystals, the physicochemical properties of a drug can be improved thus it offers a great opportunity for the development of new drug products in the pharmaceutical industry. Most significantly, co-crystals can create new medicines with increased solubility and hence improve the efficiency and safety of the treatment. The main factor which affects co-crystal preparation is its thermodynamic stability. There are different methods used for the synthesis of co-crystal such as grinding, slurrying, antisolvent, hot-melt extrusion, spray drying, etc.

KEYWORDS: Pharmaceutical co-crystals, co-crystallization, Dissolution rate, solubility, stability, solvent evaporate

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FORMULATION AND EVALUATION OF FAST DISSOLVING ORAL FILMS OF FLUCONAZOLE BY SOLVENT CASTING TECHNIQUE

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Abstract:

The present investigation was undertaken with the objective of formulating mouth dissolving film(s) of an antifungal drug fluconazole to enhance the convenience and compliance by the elderly and pediatric patients and also to avoid first-pass metabolism. Thepresentstudywasaimedtoformulateandevaluatefastdissolving oral films of fluconazole using HPMC E-5, HPMC E-15, HPMC E-50, PEG 400 and sodium starch glycolate. The suitable plasticizerand its concentration were selected on the basis of flexibility, tensilestrength and stickiness of the film. The films are prepared by solventcasting method andcharacterized by UV,FTIRstudies. The formulated films gave satisfactory result for various physic-chemical evaluations such as physical appearance, weight uniformity, thickness, folding endurance, drug content, surface pH, in vitro disintegration time and in vitro drug release. Formulation F1 was considered optimum which contained drug: HPMC E5 (1:3) and sodium starch glycolate (40 mg). The study revealed that the fast disintegrating and dissolving oral thin film can be competently formulated for Fluconazole by HPMC E5 as film forming polymer by employing solvent casting technique.

KEYWORDS:*Fluconazole;HPMC E5; fast dissolving oral films; Solvent casting method; In vitro dissolution.*

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NIOSOMES-A NOVEL DRUG DELIVERY SYSTEM

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Abstract:
Niosomes or non-ionic surfactant vesicles are microscopic lamellar structures formed on admixture of non-ionic surfactant of the alkyl or dialkyl polyglycerol ether class and cholesterol with subsequent hydration in aqueous media. They are vesicular systems similar to liposomes that can be used as carriers of amphiphilic and lipophilic drugs. The method of preparation of niosome is based on liposome technology. The basic process of preparation is the same i.e. hydration by aqueous phase of the lipid phase which may be either a pure surfactant or a mixture of surfactant with cholesterol. After preparing niosomal dispersion, unentrapped drug is separated by dialysis, centrifugation or gel filtration. A method of in-vitro release rate study includes the use of dialysis tubing. Niosomes are promising vehicle for drug delivery and being non-ionic, it is less toxic and improves the therapeutic index of drug by restricting its action to target cells. Niosomes are unilamellar or multilamellar vesicles formed from synthetic non-ionic surfactants. They are very similar to the liposomes. Niosomal drug delivery is potentially applicable to many pharmacological agents for their action against various diseases. Niosomes have shown promise in the release studies and serve as a better option.

Keywords: *Niosomes, Vesicular systems, Drug Delivery*

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FORMULATION AND EVALUATION OF ATORVASTATIN CALCIUM LIQUISOLID TABLETS & COMPARING THE DISSOLUTION DATA WITH MARKETED TABLET

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ABSTRACT

Objective: The objective of the present investigation was to improve dissolution and bioavailability of practically insoluble lipid lowering drug Atorvastatin calcium using liquisolid technique. **Method**: Liquisolid compacts were prepared by using various carriers and a mathematical model for calculating the required quantities of powder and liquid ingredient to produce an acceptably flow and a compressible admixture. Micro crystalline cellulose, Lactose monohydrate, Hydroxy propyl methyl cellulose, Dicalcium phosphate , Silicon dioxide, Crosscarmellulose were employed as carrier, coating material and super disintegrant respectively. The prepared liquisolid compacts were evaluated for their micromeritic properties and drug-excipient interactions by FTIR. The liquisolid tablets were prepared and evaluated for their tableting properties. **Results:** The liquisolid systems showed acceptable micromeritic properties, the FTIR studies states that there is no chemical interaction between the drug and the excipients. The tableting properties of the liquisolid compacts were within the accepted limits. The release rate of Atorvastatin calcium was higher when compared to the marketed Atorvastatin calcium. **Conclusion**: In the present research work, the potential of liquisolid systems to enhance the dissolution properties of Atorvastatin calcium was investigated. In case of Atorvastatin calcium liquisolid tablets thereby revealing enhanced dissolution rate than marketed tablets. Thus the objective of incorporating Atorvastatin calcium into liquisolid system to achieve faster dissolution rates was met with success.

INTRODUCTION

The oral route of administration is preferred route for drug administration because of its high patient compliance and drug development, the problem associated with oral route was plasma drug concentration may not be reached. The solubility of drug is the major concern, it is the major factor to achieve desired concentration of drug in systemic circulation. Most of the hydrophobic drugs are slightly soluble drugs, for such drugs dissolution is the rate limiting step. The major Challenge for poorly soluble drugs is to enhance to dissolution rate, because the therapeutic dose of the drug substance depends upon bioavailability which in turn depends on the solubility and dissolution rate[1]. Various techniques have been employed in order to formulate drug delivery system which enhances the dissolution rate were lyophilization, microencapsulation, solid dispersion, inclusion, co precipitation, of drug solution or liquid drugs into soft or hard gelatin capsules. all the above techniques having high production cost and technology demanding[2]. By using the

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Review Article

Gastro retentive floating microspheres: A review

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ABSTRACT

Drug absorption in the gastrointestinal tract is a highly variable process. Floating Microspheres are promises to be a potential approach for gastric retention enhances the bioavailability and controlled delivery of various therapeutic agents. Gastro retentive floating microspheres are low density systems that have sufficient buoyancy to float over gastric contents and remain and remain in stomach for prolonged period. The drug is released slowly at desired rate resulting in increased gastric retention with reduced fluctuations in plasma drug concentration. Floating microspheres to improve patient compliance by decreasing dosing frequency, better therapeutic effect of short half-life drugs can be achieved. Enhanced absorption of drugs which solubilise only in stomach, gastric retention time is increased because of buoyancy. Floating microspheres are prepared by solvent diffusion and solvent evaporation methods to create the hollow inner core. In the present review preparation, methods, characterization, advantages, mechanism of drug release from microspheres, list of polymers, applications and list of drugs formulated as floating microspheres are discussed.

Keywords: Floating Microspheres, Gastro Retention, Short half- life drugs and Solvent Diffusion.

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Avalable online at: http://www.iajps.com *Review Article*

AN OVERVIEW ON FLASH CHROMATOGRAPHY

Ch. Anupama Swathi*, O. Krupa Santhi, V. Supriya, T. Sandhya, Md. Shakirunnissa, Dr. K. Padmalatha

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Article Received: March 2021 **Accepted:** March 2021 **Published:** April 2021

Abstract:

In earlier days, Column chromatography is used for preparative purposes, qualitative and quantitative analysis in many laboratories but it is an extremely time-consuming process. This led to the development of novel preparative liquid chromatography called as flash chromatography in which the mobile phase runs down by positive air pressure. Flash chromatography is a purification technique obtained by the blend of medium, short column chromatography, which results in quick separation of mixture of components. This technique is used as preceding step to highly sophisticated methods like HPLC, NMR, FT-IR to obtain pure samples. It is a simple, fast, economical approach to preparative liquid chromatography. This review focuses on the different aspects of flash chromatographic technique.

Keywords: Flash chromatography, Preparative liquid chromatography, Highly sophisticated, Purification technique

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A REVIEW ON BIOANALYTICAL METHOD DEVELOPMENT AND VALIDATION

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Abstract:

In bioanalytical methods are widely used to quantitative drugs and their metabolites in plasma matrices and the methods should be applied to studies in areas of human clinical and nonhuman study. Bio analytical method employed for the quantitative estimation of drugs and their metabolites in biological media and plays an important role in estimation and interpretation bioequivalence, pharmacokinetic, toxicokinetic, studies. The major bioanalytical role is method development and sample analysis ligand chromatographic coupled with double mass spectroscopy can be used for the bioanalysis of drugs in body. Each of the instruments has its own merits and demerits. Chromatographic methods are HPLC and gas chromatography have been mainly used for the bioanalysis of small large molecules with LC-MS. Linearity, accuracy, precision, selectivity, sensitivity, reproducibility, and stability are some of the regularly used parameters. In this review article, we are proposed to add some points regarding bioanalytical method development and validation parameter, beneficial to quality assurance to determine the drug concentration and its metabolite.

Keywords: Method development, clinical and nonclinical study, analyte, validation of bioanalysis techniques, validation parameter.

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AN OVERVIEW OF CAPILLARY ELECTROPHORESIS

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Abstract:

Capillary electrophoresis is an effective separation technique where the ions are separated based on their electrophoretic mobility under an applied voltage. Capillary electrophoresis is most predominately used because it gives faster results and provides a high-resolution separation. It is one of the useful techniques as there is a large range of detection methods available. CE is an alternative for traditional methods such as gel electrophoresis and liquid chromatography and is employed to detect both high and low affinity molecular interactions, and separation of both charged and non-charged molecules. CE classified according to mode of separation on the basis of differences in charge, size and frictional force, offers fast separations with excellent efficiency. CE is an effective analytical tool for assay of pharmaceutical API including determination of drug related impurities. It possess other versatile applications like chiral, and bioanalysis of pharmaceutical API. This review focuses on various aspects of capillary electrophoresis and CE-based separation modes with some advantages and disadvantages along with applications.

KEYWORDS: Capillary Electrophoresis, High Resolution, Frictional Force, liquid chromatography

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A REVIEW STUDY ON EVALUTION OF BABY CARE PRODUCT

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ABSTRACT

Baby care products are gentler and intended to babies because of less pigmentation of melanocytes and small size of hypodermis in their skin. They are delicate and highly reactive. So baby products are firmly evaluated effectively and marketed by the companies. The baby products contain shampoos, soaps, wipes, oils, cleansing milks, powders, creams, etc. The compounds using in these products are surfactants, foaming agents, emulsifiers, buffering agents, vehicles, humectants, etc. We can determine their stability, surface tention, viscosity, clarity, preservative tests, etc.

KEYWORDS: Baby products, Effectively, Less pigmentation.

1. INTRODUCTION

Baby products are intended to use on new born babies to children upto 5 years. They are specially formulated to be mild and non-irritating. It is used functional rather than decorative.

There are some criteria for consideration during development

- High quality raw material.
- Nonirritant substances.
- Allergen free.
- PH- skin friendly.
- Addition of anti-oxidants, chelating agents, skin barrier protective ingredients.

Tests for baby products

Quality Control Tests is the process involved within the system to ensure job management, competence and performance during the manufacturing of the product or service to ensure it meets the quality plan as designed in IPA.

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A REVIEW STUDY ON SIMULTANEOUS DETERMINATION OF ABACAVIR, LAMIVUDINE AND ZIDOVUDINE BY USING DIFFERENT TYPES OF ANALYTICAL TECHNIQUES

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ABSTRACT

HIV(Human Immunodeficiency virus) is a virus attack the cells and body's immune system that help the body fight infection, that makes the person more vulnerable to other infections and diseases. According to worldwide statistics there are 38.0 million people are living with HIV virus. The drugs abacavir, lamivudine and zidovudine combination drugs are used to treat and prevent HIV infection. Abacavir is mainly used to treat human immune deficiency virus (HIV). Abacavir works by decreasing the amount of HIV in blood of HIV patients. Lamivudine is the antiretroviral drug is used with other HIV medications which is helpful for the control of HIV infection. Lamivudine is used for the treatment of hepatitis B infection. Zidovudine is generally recommended for use with other antiretroviral drugs. Zidovudine is used to prevent mother-to-child spread during birth or after a needle sick injury or other potential exposure. So, combination of drugs such as abacavir, lamivudine and zidovudine has been developed, evaluated and validated according to ICH guidelines. The goal of this article is to develop different analytical methods for the quantitative and qualitative determination of abacavir, lamivudine and zidovudine. So, based on the ICH guidelines some of the analytical methods like RPHPLC, HPTLC, LCMS and UPLC methods are taken into consideration for method development and validation.

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METHOD DEVELOPMENT AND VALIDATION OF VILDAGLIPTIN IN TABLETS AND DOSAGE FORM BY UV SPECTROPHOTOMETER

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ABSTRACT

Current study develops and validates a simple, precise, accurate, specific and highly sensitive method for he determination of Vildagliptin in bulk and pharmaceutical dosage forms. Vildagliptin is an oral anti-hyperglycaemia agent (anti-diabetic drug) of the dipeptidyl peptidase-4 (DPP-4) inhibitor class of drugs.Vildagliptin inhibits the inactivation of the GLP-1 and GIP by DPP-4, allowing GLP-1 and GIP to potentiate the secretion of insulin in the beta cells and suppress glucagon release by the alpha cells of the islets of Langerhans in the pancreas. Vildagliptin also shown to reduce hyperglycaemia in type 2 diabetes mellitus. The solvent used is P^H 6.8 Buffer and the λmax or the absorption maxima of the drug was found to be 210nm.The parameters specificity, linearity, accuracy, precision and robustness were evaluated according to international Conference on Harmonization (ICH) Guidelines. A linear response was observed in the range of 10-60µg/ml with a regression coefficient of 0.9901. The limit of detection (LOD) and limit of quantification (LOQ) was found to be 0.308 and 0.934 mcg/ml respectively

KEYWORDS: Vildagliptin, Hyperglycaemia, UV-Spectroscopy.

1. INTRODUCTION

Vildagliptin is an oral anti-hyperglycaemic agent (anti-diabetic drug) of the dipeptidyl peptidase-4 (DPP-4) inhibitor class of drugs. Vildagliptin inhibits the inactivation of the

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RP-HPLC Method Development and Validation for Estimation of Metadoxine in API and Pharmaceutical Dosage form

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Department of Pharmaceutical Analysis, Vijaya Institute of Pharmaceutical Sciences for women, Enikepadu, Andhra Pradesh

ABSTRACT

A rapid, specific, accurate and precise reverse phase high performance liquid chromatographic method has been developed and validated for Metadoxine, in its pure form as well as in tablet dosage form. Chromatography was carried out on a cap cell pack C18 (250 x 4.6mm, 5µm) column using a mixture of ACN: Water (65:35% v/v) as the mobile phase at a flow rate of 1.0ml/min, the detection was carried out at 305nm. The Retention time of the Metadoxine was 3.155±0.02min respectively. The method produce linear responses in the concentration range of 10-50µg/ml of Metadoxine. The precision of the method was demonstrated with %RSD values of below 2% while the % recovery was found in between 98102%. There is no interference of any compounds present in pharmaceutical dosage form was observed. According to the validation results the proposed method was found to be rapid, simple, specific, accurate, precise and robust. The method is useful in the quality control of bulk and pharmaceutical formulations.

Keywords: Metadoxine, RP-HPLC, validation.

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CONTENTS

1. Introduction

Chemical name/ Nomenclature / IUPAC Name: L-Proline, 5-oxo-, compd. with 5- hydroxy-6-methylpyridine-3,4-dimethanol
Molecular Formula: 13*H*18*N*2*O*6
Molecular Weight: 298.29 g/mol.
Official Pharmacopoeia: USP
Physicochemical Properties:
Description (Physical State): Solid
Solubility: Water Solubility 1.28 mg/ml
Storage Conditions: Store it at 15 - 30 degree C. Protect from moisture and heat.
Dosage: Tablet 500 mg

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A NEW RP-HPLC METHOD DEVELOPMENT & VALIDATION FOR SIMULTANEOUS ESTIMATION OF AMBRISENTAN AND TADALAFIL IN BULK AND PHARMACEUTICAL DOSAGE FORM

Dr. K. Padmalatha, D. Vijaya Durga, K. Sandhya Rani*

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Abstract:

A simple, rapid, precise, sensitive and reproducible reverse phase high performance liquid chromatography (RP-HPLC) method has been developed for the quantitative analysis of Ambrisentan and Tadalafil in pharmaceutical dosage form. Chromatographic separation of Ambrisentan and Tadalafil was achieved on Shimadzu HPLC, accomplished with cyber Lab LC 100 software by using Cap cell pak C18 column and the mobile phase containing 1ml Triethyl amine is dissolved in 1lt water adjust pH-7.0 with OPA & ACN in the ratio of 60:40% v/v. The flow rate was 1.0 ml/min detection was carried out by absorption at 249nm using a photodiode array detector at ambient temperature. The number of theoretical plates and tailing factor for Ambrisentan and Tadalafil were NLT 2000 and should not more than 2 respectively. % Relative standard deviation of peak areas of all measurements always less than 2.0. The proposed method was validated according to ICH guidelines. The method was found to be simple, economical, suitable, precise, accurate & robust method for quantitative analysis of Ambrisentan and Tadalafil.

Key words: HPLC, Ambrisentan and Tadalafil

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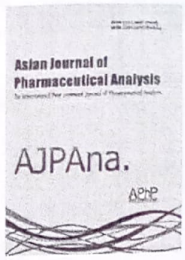

6.938

RESEARCH ARTICLE

Validated UV Spectrophotometric Method for Estimation of Prasugrel in Bulk and Tablet Dosage Form

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ABSTRACT:

Current study develops and validates a simple, precise, accurate, specific and highly sensitive method for the determination of Prasugrel hydrochloride in bulk and pharmaceutical dosage forms. Prasugrel hydrochloride is used as an antiplatelet drug for the treatment of myocardial infarction, Thrombosis prevention after percutaneous coronary intervention. It is an agent which reduces the aggregation ("clumping") of platelets by irreversibly binding to P2Y12 receptors. The solvent used is methanol and the λmax or the absorption maxima of the drug was found to be 218nm.The parameters specificity, linearity, accuracy, precision and robustness were evaluated according to international Conference on Harmonization (ICH) Guidelines. A linear response was observed in the range of 5-30µg/ml with a regression coefficient of 0.997. The limit of detection (LOD) and limit of quantification (LOQ) was found to be 0.1178 and 0.3571mcg/ml respectively

KEYWORDS: Prasugrel hydrochloride, Myocardial infarction prevention, UV-Spectroscopy, Antiplatelet.

INTRODUCTION:

Quality level of any analytical work in a quality control laboratory depends on the expertise of the analyst, most appropriate analytical procedures and overall performance of analytical instruments. The main task of pharmaceutical analyst is therefore to provide reliable analytical data rapidly and accurately.

Analytical[5,6] research and development is a requisite part of pharmaceutical industry whose goals include contributing to the development of new active substances and pharmaceutical dosage forms by providing information based on analytical chemistry, by developing analytical methods and specifications used in quality control of material for toxicological and clinical trials, and by subsequent transfer of these methods and specifications.

The development of a way for analysis of a sample should take into consideration that the analytical information is characterized with quality and reliableness. The quality[13-17] and reliableness are obtained provided that the analyst is versatile in selecting simplest ways for the sample and for instruments used

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Review Article

Pavonia odorata- An Overview of Traditional, Phytochemical and Pharmacological Studies

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ABSTRACT

Medicinal plants are of great use in sustaining human health. The plant *Pavonia odorata* commonly called as fragrant swamp mallow, sugandhabala belonging to family Malvaceae is used traditionally for the treatment of haemorrhage, inflammation, fever, urinary disorders etc in traditional and alternative systems of medicine. The plant was known to contain sesquiterpene alcohol panonenol. The review article describes various pharmacological studies conducted on the plant species. Apart from that, molecular docking studies performed, and studies carried out in Ayurveda and Siddha systems of medicine on this plant species are also discussed in the manuscript. The study indicates that the plant has undergone fewer phytochemical studies, needs to be explored further.

Keywords: *Pavonia odorata*, phytochemistry, pharmacology.

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INTRODUCTION

Medicinal plants are one of the rich resource of medicaments useful as templates in drug design and development. They are part of traditional cultures in various parts of the world. In order to prevent biopiracy many countries started documenting ethnobotanical or ethno medicinal information of their traditional resources.[1,2]

Figure 1: *Pavonia odorata* plant

(https://ayurwiki.org/Ayurwiki/Pavonia_odorata_Baalaka,_Sugandha_bala)

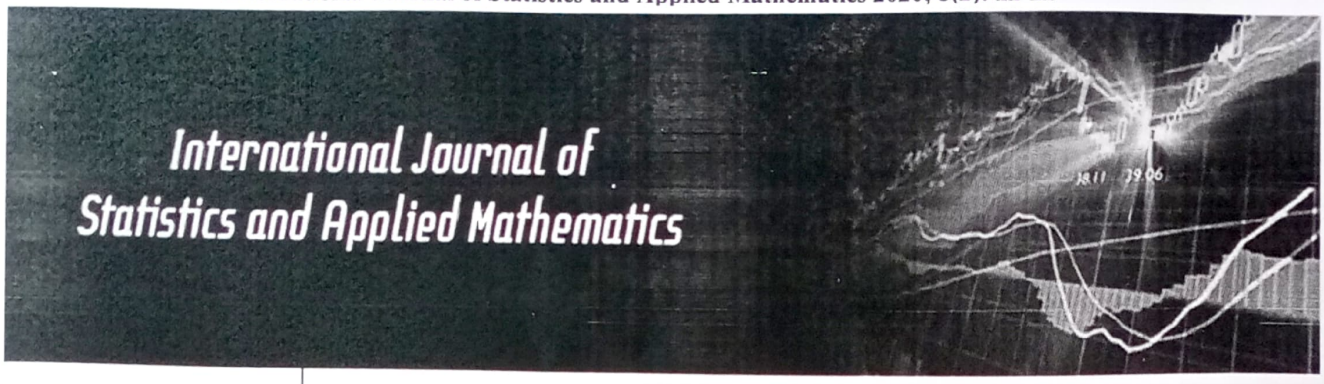
Pavonia odorata, or Sugandhabala, is one of the valuable medicinal plant species belonging to the family Malvaceae. The plant is known in various languages as fragrant swamp mallow (English), Sugandhabala, (Hindi), Hribera (Sanskrit), and Chittibenda (Telugu). It is distributed in tropical part of Indian subcontinent, Africa, Sri Lanka, Pakistan and yanmar[3]. The shoots and roots of this plant are exceptionally aromatic. The photograph of the plant is given in figure 1. The microscopical diagnostic features include cortex with more starch grains, druses and few raphides. The pericyclclic part consists of discontinuous arrangement of sclerenchymatous cells.[4]

Ethnomedicinal & Alternative Systems of Medicine Usage

The plant is used traditionally in the treatment of various chronic diseases like diabetes in Siddha[5] and Ayurvedic system of medicine.[6] It was referred to as analgesic and antipyretic herb in Siddha system of medicine.[7] The plant extract acts as cooling, carminative, demulcent, diaphoretic, and anti-pyretic agent[8]. It is used in dysentery, ulcers and bleeding disorder. The roots are generally used in stomachache, as astringent, and demulcent.[3] The aqueous extract of the plant is used in mineralization and demineralization reaction of ayurvedic formulatin.[9] The plant is often adulterated with bala plants.[10] It is one of the ingredients of Vasakadyaristam.[11]

Phytochemistry

GC-MS analysis of volatile oil of the plant showed the presence of major phytochemicals such as a-eudesmol, b-caryophyllene oxide, ageratochromene, hexahydrofarnesyl acetone, and palmitic acid[8]. Palmitic acid, caporic acid, hexahydrofarnesyl acetone, alpha-terpinene, alpha-pinene, alpha-eudesmol etc. The most



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Analysis of Means Based on Rayleigh Variate

B SriRam, V Srinivas and RRL Kantam

Abstract
A measurable quality characteristic is assumed to follow a Rayleigh distribution which is an important skewed distribution in statistical inference and related fields. The statistical technique used in illustrating important variations among groups of data employed commonly in quality control, Analysis of Means methodology compares the mean of each group to the overall process mean to detect statistically significant differences is called Analysis of Means. This principle enables us to work out the decision lines. The preferabilility of the proposed Analysis of Means decision lines over that of Ott (1967) based on normal and half logistic distribution is illustrated by some examples

Keywords: ANOM, confidence interval, Rayleigh

1. Introduction
In classical statistical inference confidence for unknown parameters of a statistical population is an inferential procedure. An application of confidence interval usually the 99.73% confidence interval when the variate follows normal distribution is the origin of the well known shewart control charts. Construction of control charts using the theory of confidence intervals when the variate follows inverse Gaussian distribution is considered by Edgeman (1989) [1]. The justification Edgeman (1989) [1] is that the appeal to the central limit theorem for non-normal process control charts is not possible as sample size in the control chart analysis is usually 10 or less. Moreover quality variate such as product life is often better modeled by the probability distribution of a normal distribution.
If normal distribution is considered as a central model for any classical inferential procedure similar place can be attributed to exponential distribution in life testing and reliability studies. It is the only model exemplifying constant failure rate of a product which has life and eventual failure or death. On the other hand we know that ageing of the product is a primary criterion that contributes to its failure. Here models that represent aging phenomenon of as product are also equally desirable in problems of quality control and reliability. Among many such models Rayleigh distribution is an ageing model also called an increasing failure rate model. From a different version is generalization of weibull distribution with shape parameter 2 also. Kantam and SriRam (2001) [4] developed control charts to be used when the process variate follows Rayleigh distribution. Kantam *et al* (2012) [16] developed ANOM procedure for exponential and gamma variate. In this paper we made an attempt to study the ANOM procedure representing a quality characteristic modeled by Rayleigh distribution. The procedure of ANOM is presented in section 2 and respective illustrations are given in section 3 and are compared.

2. Analysis of Means
The Shewart control chart is as common tool of statistical quality control for many practioners. When these charts indicate the presences of an assignable cause (of non random variability) are adjustment of the process is made if the remedy is known. Otherwise the suspected presence of assignable cause is regarded to be an indication of heterogeneity of the sub group statistic for which the control chart is developed. For instance the statistic is sample mean, this leads to heterogeneity of process mean indicating departure from target mean. Such an analysis is generally carried out with the help of the well-known analysis of variance. Ott (1967) [8] developed a procedure called Analysis of Means (ANOM) to divide a collection of a given number of sub group means into categories such that means within a category are

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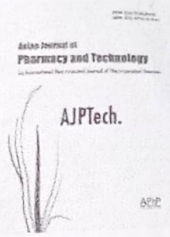

RESEARCH ARTICLE

Evaluation of Phytochemical and *in Vitro* Anti-Inflammatory activity of Leaf and Fruit Extracts of *Casuarina equisetifolia*

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ABSTRACT:

The plant *Casuarina equisetifolia*, commonly called as horse tail belonging to family Casuarinaceae is used traditionally for the treatment of infections, ulcers, cough, diarrhea etc. The plant is a rich source of tannins and flavonoids. In the current study the plant leaf, fruit aqueous and ethanolic extracts were determined for total flavonoid content followed by *in vitro* anti-inflammatory activity study by HRBC membrane stabilization and protein denaturation assays. The results indicate that highest amount of rutin equivalent flavonoids were present in ethanolic extract of leaf, aqueous and ethanolic extracts of fruit. Fruit extracts exhibited highest % inhibition of lysis of HRBC. Aqueous leaf and fruit extracts exhibited highest inhibition of protein denaturation, The results indicate that further in vivo studies, phytochemical isolation, characterization studies could be conducted for plant extracts

KEYWORDS: *Casuarina equisetifolia*, total flavonoid, anti-inflammatory, HRBC lysis, protein denaturation.

INTRODUCTION:

Medicinal plants are potential store houses of various secondary metabolites regarded as phytochemicals gifted to Mankind to lead a disease-free life. The currently used 74% of drugs were developed with the help of ethnobotanical information[1]. Plant-based drugs have greater scientific and economic significance[2] with about 80% of the world's inhabitants relying mainly on traditional medicines for their primary health care needs [3]. The inflammatory response involves a complex array of enzyme activation, mediator release, cell migration, tissue breakdown and repair which are aimed at host defense and usually activated in most disease condition.

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The practice of using plants, their parts or extracts as anti-inflammatory compounds is known since antiquity [4]. Flavonoids, including around 6000 phenolic compounds, are products of the secondary metabolism of plants which can be a part of one's diet via the consumption of many edible plants. Chemically, flavonoids have a polyphenolic structure that confers antioxidant activities on them[5]. Beyond antioxidant properties, some particular kinds of flavonoids have shown protective effects against inflammatory-mediated disorders such as cancer, cardiovascular diseases, gastrointestinal alterations and nervous system-related syndromes, such as depression, epilepsy, Alzheimer's disease and neurodegenerative disease, insulin-resistance obesity among other pathologic conditions[6]. In an immunity, inflammation context, in inflammatory-mediated diseases, the six subclasses of the flavonoid compounds act by various mechanisms at molecular

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Scientific Publications 2020-21

PREVALENCE AND RISK OF ANTIPSYCHOTIC POLYPHARMACY AMONG ELDER SCHIZOPHRENIA PATIENTS IN ASIA

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ABSTRACT: Antipsychotic Polypharmacy (APP) is a controversial topic in the treatment of older adults with schizophrenia. APP is prescribing the multiple anti psychotics for individual patient to get symptoms relief by immediate therapeutic response and used in case of insufficient therapy or in treatment resistant conditions. Monotherapy is preferred as 1st line choice for management of symptoms but are in effective in 15 – 39 % of schizophrenia cases. APP causes extra pyramidal side effects and drug interactions in combinational regimen due to high dosage of drugs. Instead of these APP are highly effective then monotherapy. Prevalence rate of APP ranges from 4 - 92.2 % depending on patient population, diagnosis, study design and geographical region. The aim of this study was to know the use of antipsychotic polypharmacy (APP) pattern in Asian patients with schizophrenia and examine their prevalence and risk association.

Study 1 - is Cross sectional case record audit conducted at 32 centers in 6 - East Asian countries and territories (Taiwan, China, Japan, Hong Kong, Korea and Singapore) in July 2001.

Study 2 - was Research on Asian Psychotropic Prescription Patterns (REAP) project conducted in July 2001 followed by 2 waves of studies in July 2004 and October 2008 to March 2009.

Study 3 - was REAP – AP4 project based on the dataset of the 4th survey conducted between March and May 2016.

Antipsychotic prescriptions of patients with schizophrenia from different countries and territories were evaluated. Daily doses of antipsychotic medications were converted to standard chlorpromazine equivalents (CPZ).

KEYWORDS: Antipsychotic Polypharmacy (APP), Schizophrenia, Monotherapy, Prevalence, Chlorpromazine equivalent (CPZ equivalent).

INTRODUCTION: Schizophrenia or Dementia praecox is severe psychiatric disorder in which people interpret reality abnormally that result in combination of delusions, hallucinations, loss of personality and extremely disordered behavior and thinking which has reduced life expectancy up to 20 % compared to healthy population. Antipsychotic medication (Neuroleptics) is 1st line treatment for schizophrenia to manage

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A REVIEW ON HOSPITAL WASTE MANAGEMENT

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ABSTRACT

Hospital care waste is indispensable for our life and health, but waste generated from the hospital activities represents a factual problem of living nature and human world. Hospital waste constitutes a potentially deleterious materials with a distinct category of waste . Every day huge amount of indisputably infectious and hazardous wastes are generated in the health care hospitals and facilities around the world. The disposal of these wastes could also lead to environmental problems. Bio waste is composed of various fractions with variable dangers depending on their origin and content. The community to the toxic effects of waste generated from health activity may leads to poor management of health care waste which exposes health labors,waste handlers like garbage disposer,waste disposal unit etc. This article intends to describe various health care wastes, BMW Classification, categories based waste management hierarchy, waste minimization, Hospital solid waste management plan, treatment, processing and disposal options.The main aim of this paper is to highlight the present condition of hospital based waste and a review on scientific method of hospital waste management.

KEYWORDS: Hazardous waste, waste management hierarchy, solid waste Managemen , Environmental problems, waste minimization.

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A DESCRIPTIVE STUDY ON PRESCRIBING PATTERN AND ASSESSMENT ON QUALITY OF LIFE OF STROKE PATIENTS IN NEUROLOGY DEPARTMENT IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Cerebrovascular accident (CVA) or stroke is the second leading cause of the death third leading cause of disability. The main aim of the study is to assess the prescribing pattern and assess about quality of life of stroke patients in neurology department. The total no. of patients was 93. According to the age group, 41-50 males were 14 (24.5), females were 5 (13.8). 51-60 males were 21 (36.8), females were 15 (41.67). 61-70 males were 18 (31.5), females were 9 (25.0). 71-80 males were 4 (7.02), females were 7 (19.43). From the above data males and females are more common in the age group 50-60. A gender wise distribution was mentioned males were 57 (61.29%) and females were 36 (38.71%). had hypertension 18 (31.57), females had 10 (27.78). Males had diabetes mellitus 11 (19.29), females had 7 (19.44%). Both hypertension and diabetes mellitus in males was 16 (28.07%), in females 11 (30.56%) and none of both hypertension and diabetes mellitus 12 (21.05%) in males and 8 (22.22%) in females. The present study was performed in patients to assess the quality of life after stroke. Start slowly and build up to at least 150 minutes of moderate physical activity a week and regular treatment should be followed.

KEYWORDS: Stroke, Hypertension, Diabetes, GCS, MMSE.

INTRODUCTION

The World Health Organization (WHO) definition of stroke is: "rapidly developing clinical

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A DESCRIPTIVE REVIEW ON GLUCOCORTICOID INDUCED HYPERGLYCEMIA

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ABSTRACT

Glucocorticoids are steroid hormones, which are therapeutically used in almost all medical specialities, as anti-inflammatory and immunosuppressant. Glucocorticoids are widely indicated to treat inflammatory disorders and autoimmune diseases like rheumatoid arthritis, multiple sclerosis, asthma, skin rashes, chronic obstructive pulmonary disease, acute gout and systemic lupus erythematosus. Although the successful evidence for the efficacy of glucocorticoids in the treatment, their clinical use is restricted by some side effects. However, a numerous side effects have been pointed associated with use of glucocorticoids including increased blood pressure and blood sugar levels, glaucoma, fluid retention, menstrual irregularities, weight gain, insomnia, stomach pain and infection. Approximately 40% and 70% of patients had been developed with new-onset of steroid induced hyperglycemia at 550-bed and 1000-bed teaching hospital respectively. The underlying and fundamental mechanisms of these effects of glucocorticoids are recognizable, complex and partly defined. Glucocorticoid induced hyperglycemia (GIH) is a transient condition, developed either by stimulating gluconeogenesis in hepatic metabolism or by showing inimical on insulin action. Early detection and appropriate management of glucocorticoid induced hyperglycemia should provide better remission for the patients receiving glucocorticoid treatment. This review article mainly focuses to highlight the prevalence, risk factors, pathogenesis and treatment guideline of glucocorticoid induced hyperglycemia.

KEYWORDS: Glucocorticoids, Side effects, Hyperglycemia, Treatment.

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A BRIEF OVERVIEW ON ACUTE PANCREATITIS

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ABSTRACT

Acute pancreatitis is a common condition brought on by gallstones or excessive alcohol consumption. The diagnosis is usually made based on the patient's symptoms, which are frequently accompanied by increased serum pancreatic enzymes. Imaging is not always necessary, but May be Performed for many reasons, such as to confirm a diagnosis of pancreatitis, rule out other causes of abdominal pain, elucidate the cause of pancreatitis, or to evaluate for complications such as necrosis or pseudocysts. While the majority of patients will have mild, self-limiting disease, a small percentage will develop severe disease that leads to organ failure. These patients are at risk for pancreatic necrosis, fluid collections, pseudocysts, and pancreatic duct distortion as a result of persistent pancreatic inflammation. Acute pancreatitis is treated with supportive treatment that includes fluid Replacement, pain management, and a gradual return to normal eating habits. Validated grading systems can help guide monitoring and treatments by predicting the severity of pancreatitis. If there is no evidence of pancreatic infection, prophylactic antibiotics are not required in acute pancreatitis. Patients who do not improve will need to be evaluated further to see whether they have any problems that necessitate intervention, such as pseudocysts or pancreatic necrosis. In the right clinical situation, endoscopy, including ERCP and EUS, and/or cholecystectomy may be recommended. The treatment of a patient with severe acute pancreatitis will eventually necessitate a multidisciplinary approach.

KEYWORDS: Pancreatitis, alcohol, abdominal pain, organ failure, treatment, inflammation, fluid replacement.

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PRESCRIBING PATTERNS OF ANTIBIOTICS IN REPIRATORY TRACT INFECTIONS IN DIFFERENT COUNTRIES

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ABSTRACT

Tremendous respiratory tract infection burden developed in various countries. Communicable diseases raises the mortality and morbidity worldwide. Respiratory tract infections include upper and lower respiratory tracts infection. Antibiotics are therapeutically used in the management of the respiratory tract infections. These are inappropriately prescribed and utilization of improper antibiotic makes the prescription irrational in various countries which leads to development of antibiotic resistance, progression of infection and can be fatal to the patient. Analysis of prescription improves the rational use of antibiotics. While auditing the prescription, the clinical pharmacist should focus on preventing infections with rational use of antibiotic which helps in optimizing management and preventing unnecessary use of antibiotics. Along with the prescriptions patterns studies, it allows to know the standards and quality of health care professionals. Few studies follow international recommendations for prescribing patterns, and the majority of prescribers do not follow the guidelines, the most frequently prescribed antibiotics from these studies are Penicillin, Penicillin beta lactam combinations followed by cephalosporins; macrolides followed by cephalosporin beta lactam combinations, quinolones, carbapenems, metronidazole were prescribed. In this review article five studies have been included from various articles and results of their respective study were analysed.

KEYWORDS: Respiratory tract infection, antibiotics, prescription.

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A REVIEW ON COMPLICATIONS OF HEMODIALYSIS IN CHRONIC KIDNEY DISEASE PATIENTS

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ABSTRACT

Haemodialysis is the most commonly utilized current standard practice for the patients with end stage renal disease (ESRD). The main aim of this study is to describe the complications of dialysis in chronic kidney disease patients when kidneys are not able to perform its normal function. Complications are frequently encountered although haemodialysis is a safest measure. The common complications include hypotension, muscle cramps, fever, chills, electrolyte imbalance, and headache. Life threatening cardiovascular complications such as arrhythmias is rare. Hence, this study helps to understand the complications of dialysis which aids the health practitioner to control or prevent the complications of dialysis and in turn promote the better-quality life of patient.

INTRODUCTION

Dialysis is a medical procedure which involves the removal of toxins from the blood and adjust electrolyte imbalances at which substances diffuse through a semi-permeable membrane with the help of a dialyzer. It is primarily used as an artificial replacement in people when kidney function is lost. Dialysis works on the principle of diffusion which is defined as the process of movement of substances from high concentration to low concentration. Blood flows through a semi-permeable membrane which is a thin layer of material that contains pores of various sizes. The membrane blocks the passage of larger substances and allows smaller solutes and fluids. This reflects the filtering process that usually takes place in kidneys.

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A REVIEW ON EVALUATING CLINICAL FINDINGS AND TREATMENT PLAN OF NOSOCOMIAL INFECTIONS

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ABSTRACT

Nosocomial infections are infections that occur while receiving medical treatment in a hospital. the incidence of hospital acquired infections was found to be reported as seven in developed and ten in developing countries among total of hundred hospitalized patients. patients in Intensive care unit (ICU), burn units, patients who are undergoing organ transplant and neonates are more prone to develop nosocomial infections. Increased length of hospitalization, increased antibiotic resistance and increased mortality rate the effects resulting from increasing risk of infections. Central line associated blood stream infections, CAUTI, SSI and VAP are mainly occurring types of infections. Bacteria (Aceinotobacter, Bacteriods, fragils, clostridium difficle, enterobacteriaceae, etc), viruses (hepatitis viruses, rotavirus and herpes simplex virus), and fungal parasites (aspergillus, candida albicans, cryptococus neoformons) are responsible for the incidence of nosocomial infections. The step to prevent the infections is to control the spread of infection and thereby resulting significant reduction of illness. Appropriate anti microbial usage should be followed based upon type of pathogens and patients tolerance. this review article mainly focus nosocomial infections in detail.

KEYWORDS: Noscomial infections, Hospital acquired infection, pathogens.

INTRODUCTION

"Nosocomial" term is used for any disease acquired by patient under health care. It is a vital problem in hospitals. Hospital acquired/ health care associated infection is also called nosocomial infection. health care associated infections appear in a patient under medical care

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PREVALENCE OF SUBSTANCE ABUSE DISORDERS IN YOUNG AGE

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ABSTRACT

Substance use disorder occurs when a person's use of alcohol or another substance (drug) leads to health issues or problems at work, school or home. This disorder is called substance abuse. The exact cause is not known. Commonly used substances include **Opiates and other narcotics** (heroin, opium, codeine, and narcotic pain medicines), **Stimulants** (cocaine and amphetamines), **Depressants** (alcohol, barbiturates, benzodiazepines, chloral hydrate, and paraldehyde). **Hallucinogen** (LSD, phencyclidine) **Marijuana** (cannabis, or hashish).

Study 1 was a cross-sectional study; with a sample size of 730 randomly selected 12th-grade students out of 3773, in Yazd, a central province of Iran, during 2014.

Study 2 was an institution-based survey was conducted in February 2014 at a private university in Khartoum State, Sudan, with a sample size of 500.

Study 3 was a descriptive study carried out at the University of Benin City, Edo state, with a sample size of 800 students.

KEYWORDS: Substance abuse disorder, Prevalence.

INTRODUCTION

Adolescents and young adults are at high risk of tobacco, alcohol, cannabis or other illegal drugs use (Choquet et al., 2004; Merline et al., 2004). Prevalence of substance use tends to decrease during the 20s and 30s (except for tobacco), but a significant fraction of young adults continue using and abusing alcohol and illegal drugs (Melchior et al., 2008;

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REVERSE AGEING BY TELOMERES IN HUMANS

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ABSTRACT

As people live longer, population aging puts pressure on economy in terms of increased health care services, decreased capacity to do work and dependence on others. Aging is gradual process of becoming older that increases mortality over time by negatively affecting its vitality and functional performance. Aging is major risk factor for developing variety of diseases. The 2 - main hallmarks of aging at cellular level are telomere length shortening and cellular senescence. Telomeres are specific ribonucleoprotein contains tandem repeats of TTAGGG bases, which are bounded by complex called shelterin, prevents the DNA repair machinery from mistaking, helps in ensuring effective DNA replication and preventing from deterioration each time a cell inside your body divide, a silver of your youth vanishes in the wind, this occurs via shortening of telomeres, eventually telomeres become critically short, thus results in cellular senescence, where the cell no longer undergoes division and starts accumulating the damage that it cannot repair which leads to aging and development of illness. A human immortality enzyme called telomerase capable of indemnifying the progressive attrition of telomere by adding TTAGGG repeated chunks to the chromosome ends, thus delays, stops or even reverses the ageing that occurs because of telomere shortening. Scientists has proposed ways for extension of telomeres by exposing humans to HBOT (Hyperbaric Oxygen Therapy) and introduction of modified TERT (Telomerase Reverse Transcriptase) mRNA into human cells. These methods were found to be fruitful in reversing the age of the human. Hence, the chances of reverse aging were more when subjects were treated with above methods. If these methods were well succeeded one can decrease the percentage of old age population which further reduces the aging and associated diseases thus leads to increased global productivity and economy.

KEYWORDS: Reverse Aging, Telomeres, Economic burden, reverse aging.

INTRODUCTION

As aging population increases, burden on economy increases because with increasing age, productivity decreases and they prone to more disease exposure which increases health services and make them reliable on others. In the past 1800's the life expectancy was relatively very shot i.e., 40 yrs. It was drastically increased from the past 150 yrs. Now the global life expectancy has risen to 72.6 years, this is due to advancement in medical field, better living, increased productivity of agriculture; the longevity of life has increased.

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Coronavirus disease-2019: A review on the disease exacerbation via cytokine storm and concurrent management

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ABSTRACT

Setting up treatment strategies is the highest concern today to reduce the fatality of COVID-19. Due to a very new kind of virus attack, no specific treatment has been discovered to date. The most crucial way to dominate the disease severity is now the repurposing of drugs. In this review, we focused on the current treatment approaches targeting the crucial causative factors for the disease burden through cytokine storm or cytokine release syndrome. Several vaccines have been developed and have been applied already for prevention purposes, and several are on the way to be developed, although the effects and side effects are under observation. Presently, regulation of the immune response through intervention treatment methods has been adjusted on the basis of the COVID-19 severity stage and generally includes vaccines, immunotherapies including convalescent plasma and immunoglobulin treatment, monoclonal antibodies, cytokine therapy, complement inhibition, regenerative medicine, and repurposed anti-inflammatory and immune-regulatory drugs. Combination therapy is not acceptable in all respects because there is no concrete evidence in clinical trials or *in vivo* data. Target-specific drug therapies, such as inhibition of cytokine-producing signaling pathways, could be an excellent solution and thus reduce the severity of inflammation and disease severity. Therefore, gathering information about the mechanism of disease progression, possible goals, and drug efficacy of immune-based approaches to combat COVID-19 in the context of orderly review analysis is consequential.

1. Introduction

In late December 2019, the Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) outbreak initially started in the Hubei province of Wuhan, China [1]. It created great havoc in March 2020, and therefore, the World Health Organization (WHO) declared that, following Spanish flu (H1N1) in 1918, Asian flu (H2N2) in 1957, Hong Kong flu (H3N2) in 1968, and Pandemic flu (H1N1) in 2009, SARS-coV-2 can be characterized as a pandemic of 2020 [2]. As per the Johns Hopkins corona virus research center report, there are 191 countries

Abbreviations: ACE, Angiotensin Converting Enzyme; ADAM-17, Disintegrin and Metallopeptidase Domain; Ag, Angiotensin; APCs, Antigen Presenting Cells; ARDS, Acute Respiratory Distress Syndrome; Cathepsin L, Cathepsin of Lysosome; CLR, C-type lectin receptors; COVID, Coronavirus Disease; CSF, Colony Stimulating Factor; HCoV, Human Corona Virus; HGF, Hepatocyte Growth Factor; IFN, Interferons; IKK, IKb kinase Complex; IL, Interleukins; IP, Inducible Protein; JAK, Janus Kinase; MAPK, Mitogen-activated protein kinase; MAPKK, Mitogen activated Protein Kinase Kinase; MAPKKK/MAP3K, Mitogen activated protein Kinase Kinase Kinase; MAPKs, p38 Mitogen Activated Protein Kinases; MCP, Monocyte Chemoattractant Protein; MERS, Middle East Respiratory Syndrome; MIP, Macrophage Inflammatory Protein; M^{pro}, main protease; MyD88, Myeloid Differentiation Primary Response dependent; NF-κB, Nuclear Factor kappa B; NK cells, Natural Killer cells; NLR, Nucleotide-binding oligomerization domain-like receptors; nsps, nonstructural proteins; PAMPs, Pathogen Associated Molecular Patterns; PL^{pro}, Papain like protease; PORCN, Porcupine O Acetyl transferase.; pp, polyproteins; PRRs, Pattern Recognition Receptors; RBD, Receptor Binding Domain; RdRp, RNA dependent- RNA polymerase; RIG-1, Retinoic acid inducible gene-1; SARS-CoV-2, Severe Acute Respiratory Syndrome Corona Virus-2 (novel corona virus); SARS, Severe Acute Respiratory Syndrome; SFRP, Secreted Frizzled related proteins; SP, Spike Protein; STAT, Signal Transducer and Activator of Transcription Proteins; TLR, Toll like Receptor; TMPRSS2, Type II Transmembrane Serine Protease 2; TNF, Tumor Necrosis Factor; TRIF, TLR domain containing adaptor inducing IFN-β; VEGF, Vascular Endothelial Growth Factor; VUI, Variant Under Investigation; WHO, World Health Organization; Wnt, Wingless related Integration site.

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A SYSTEMIC REVIEW ON ADVERSE DRUG REACTIONS REPORTED IN A PERIOD FROM 2014 TO 2018 IN DIFFERENT PARTS OF INDIA

6.129

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ABSTRACT

One of the main causes for the morbidity and the mortality in the world is Adverse Drug Reaction(s) [ADR]. Thalidomide tragedy is the best example for ADR after which international attention to patient safety was gradually increased. There was global occurrence of 10% of ADRs where 2% were reported in India. Major contributors for morbidity, mortality and hospitalization of patients and increasing economic burden of patients are ADRs. CDSCO and Pharmacovigilance play a key role in the identification of ADRS. This study was carried out by collecting different ADRs collected and reported by health care professionals at different places of India. Underreporting was the main problem in reporting an ADR which can be overcome by following spontaneous reporting system. Most vulnerable organs for ADRs are Gastrointestinal tract along with skin & appendages. Antimicrobials are the class of drugs which majorly causes ADRs. Adults and middle aged are common group of people affected due to ADRs. Causality, severity and preventability were calculated using different scales like WHO-UMC causality assessment scale, Naranjo causality assessment scale, Hartwig's severity assessment scale and Schumock and Thornton Preventability assessment scale.

KEYWORDS: Adverse Drug Reaction, ADRs reported in different parts of India, vulnerable organs for ADRs, Most ADR causing drugs.

INTRODUCTION

One of the main causes for the morbidity and the mortality in the world is Adverse Drug Reaction(s) [ADR]. A best example for ADR was Thalidomide tragedy which occurred during late 1950's. An ADR is an unforward effect which can occur even when the drug is given within the therapeutic range.[1]

The most common cause for the medical intervention is drugs, which uses generally for diagnosis or prevention or mitigation. So, the saying goes "Drugs are double edged weapons".[2] One of the important cause for increasing mortality and morbidity in ambulatory and hospitalized patients were Adverse Drug Reactions.[3] Age, gender, co-morbidities, genetic factors are the patient related factors and route of administration, time of administration, duration of therapy, type of drug and dosage of drug are the drug related factors which influences the severity and incidence of Adverse Drug Reaction.[2]

According to World Health Organization (WHO) – ADR is any response to a drug which is noxious, unintended which occurs at doses normally used in man for prophylaxis or diagnosis or therapy of disease or for the modification of physiology of the body.

According to Karch and Lasagna – An ADR is any response to a drug that is noxious and unintended which occurs at doses used in humans for prophylaxis or diagnosis or therapy excluding failure to accomplish the intended purpose.

An important tool for the collection of ADR is to establish a relation between drug and it's reactions. For the betterment of the ADR reporting FDA categorized the serious adverse event into life threatening, initial or prolonged hospitalization, disability, congenital anomaly, required intervention to prevent permanent damage.[1] Proper monitoring of ADRs can prevent the occurrence.[2] Pharmacovigilance and CDSCO (Central Drug Standard Control Organization) are helpful for reducing the preventable adverse drug reactions.[3 & 4] A health care professional (HCP's) plays a vital role in reporting the adverse drug reaction(s). ADRs reported by health care professionals created information to generate new signals which helped in updating the knowledge of other HCP's.[5] There are different scales for the

Research Article

A prospective observational study on assessment of adverse drug reactions in the in-patients of general medicine department at a tertiary care hospital

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Abstract

Objective: According to World Health Organisation (WHO), "an Adverse Drug Reaction (ADR) is a response to a drug which is noxious and unintended that occurs at doses which are normally used to prophylaxis, diagnosis, therapy of disease or for the modifications of physiological function". The main aim of the present study was to evaluate and assess the ADRs with prescribing rationale in the patients admitted in General Medicine Department at a tertiary care teaching hospital. **Material and Methods:** It is a Prospective Observational Study that was carried out for a period of 6 months in new Government General Hospital, Vijayawada. **Results and conclusion:** A total of 208 subjects were included in this study and assessed using WHO causality assessment scale, Naranjo's Causlity assessment scale and Hartwig's Severity assessment scale. Among the 208 subjects 54(25.96) ADRs were observed. Most of the ADRs were seen in males when compared to females between the age groups of 31-40 years and 51-60 years and affected gastrointestinal tract. Depending upon the Causality, most of the ADRs were 'Probable' as per WHO-UMC Causality Assessment Scale and 'Possible' as per Naranjo's Causality Assessment Scale.

Keywords: ADRs, drugs, tertiary care hospital, General Medicine department, observational study, causality assessment and severity assessment.

According to the World Health Organization (WHO), Adverse Drug Reaction (ADR) is defined as "a response to a dangerous and unintended drug, which occurs in doses commonly used for prophylaxis, diagnosis, treatment or physical therapy" (Shukla et al., 2017). Although India accounts for 10% of global drug use, the reported ADR of drugs is 2%. This is mainly due to the poor report of drug abuse in India (Bahri, 2016). The incidence of ADRs as a whole leads to emergency admissions ranging from 0.2% to 41.3% worldwide, while 28.9% are safe (Palanisamy, 2013). Hospital admissions for ADR ranged from 2.9% to 5.6%. About 35% of patients in hospitals receive ADR. In India, the incidence of ADR is between 5.9 to 22.3% while deaths due to ADR accounts as 1.8% (Sivasankaaran et al., 2016). Many factors can put a patient at the forefront of the diagnosis of ADR patients with one or more risk factors for ADR including the pharmacy of Poly, many diseases and current, age, drug characteristics, gender, race and genetic factors (G. Parthasarathi, Sten Olsson). The purpose of this study was to evaluate and evaluate Adverse Drug Reaction with reasonable determination in patients admitted to the General Department of Health of a tertiary education hospital.

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Materials and methods

Source of data: Collection of data from the patients admitted into General Medicine

Department of New Government General Hospital, Vijayawada.

Study Procedure: All the patients admitted in the General Medicine department during the

study duration were followed from the day of admission to the day of discharge and during the follow up.

Study Site: New Government General Hospital, Vijayawada.

Study Duration: The study was carried out for a period of 6 months from 1st August 2019 to 31st January 2020.

Study Design: A Prospective Observational Study.

Study Criteria: The study was carried out by considering the

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Overview on Quality of Life in Patients with Hypertension

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2.02

Abstract

Although the prevalence of hypertension is increasing, less than half of hypertensive patients are aware of their condition. The most common risk factor for cardiovascular disease is hypertension. Because symptoms of hypertension are not visible in the early stages, it is known as the silent killer; if left untreated, it causes end-organ damage. Because hypertension is a chronic disease, medications should be taken for the rest of one's life. To keep blood pressure under control, both pharmacological and non-pharmacological treatment is required. Quality of life has emerged as an important tool in the fields of social science, clinical medicine, and health care. Non-communicable and chronic diseases are evaluated in terms of quality of life. The assessment of health-related quality of life is important because it aids in the understanding of the effects of disease on health. Various questionnaires, such as the SF-36 (Short Form-36) and the SF-12 (Short Form-12), are used to assess quality of life. Questionnaires cover a wide range of topics, including patients' mental and emotional health, physical functioning, social aspects, vitality, and overall health. The number of questions varies depending on the questionnaire used to assess quality of life, but most of them cover the same domain, such as mental health and general health.

Keywords: End organ damage, Quality of life, SF-36, SF-12

Introduction

A persistent elevation of blood pressure (bp) in the arteries is defined as hypertension/high blood pressure. It is measured in terms of systolic and diastolic blood pressure (systolic –pressure excreted by blood on the artery walls of the heart during systole or heart contraction, diastolic –pressure excreted by blood on the artery walls of the heart during heart relaxation). Cardiac output (CO) and Systemic Vascular Resistance (SVR) or Systolic blood pressure (SBP), diastolic blood pressure (DBP) can be used to calculate Mean Arterial Pressure (DSP).

$$MAP=CO\times SVR \quad \text{or} \quad MAP=1/3\ SBP + 2/3\ DBP$$

Hypertension is called as silent killer because there are no symptoms in the early stages of hypertension; it increases the risk of developing cardiovascular diseases and other conditions such as hemorrhagic stroke, ischemic stroke, stroke, and ischemic heart disease if left untreated. Headache, facial flushing, dizziness, chest tightness, and vertigo are few clinical manifestations/symptoms of hypertension. Lack of physical activity, obesity, excessive salt consumption, smoking, and chronic alcoholic consumption all increase the risk of hypertension. The general public is

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A REVIEW ON IMPACT OF MENTAL HEALTH ISSUES BURDEN AND ITS THERAPEUTIC STRATEGIES IN COPD PATIENTS

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ABSTRACT

Chronic obstructive pulmonary disease (COPD) is described by chronic airflow restriction induced by an overactive inflammatory response in the lungs and partially reversible symptoms. People with the chronic obstructive pulmonary disease face a significant challenge, which may include a variety of symptoms (breathlessness, cough, sputum production, wheezing, and chest tightness) of varying severity. COPD patients also experience psychiatric comorbidities. Anxiety and/or depression have been related to an increased risk of death, exacerbation rates, hospitalization duration, and a lower quality of life and functional status in COPD patients. Comorbid depression is common in COPD patients and is linked to a worsening of the disease's course. Despite its negative consequences, depression and anxiety are frequently undiagnosed and untreated in COPD patients. There is no consensus on the best way to screen COPD patients for anxiety and depression. The treatment strategies include behavioral and pharmacological approaches and more high-quality trials are required to improve the screening and treatment of anxiety and depression in COPD patients, as well as their complex chronic condition management. The findings of this narrative analysis, which primarily focus on clinical data in COPD patients in various locations, indicate that improved knowledge and recognition are needed to alleviate this burden.

KEYWORDS: Mental health issues, anxiety, Depression, Mechanisms, Therapeutic options.

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AN OVERVIEW ON IMPACT OF PSYCHOLOGICAL FACTORS IN PATIENTS UNDERGOING DIALYSIS

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ABSTRACT

Chronic kidney disease (CKD) also known as End stage renal disease (ESRD) is a commonest, debilitating, long standing public health condition. During the initial stages of CKD, treatment is mainly focused on slowing the progression of kidney damage and treating the complications. In the final stage, dialysis or renal transplantation becomes core responsible to maintain health. The most frequent psychopathological problems among patients undergoing dialysis are depression and anxiety which is still under recognized and misdiagnosed. The dialyzed patients are often subjected to depression and anxiety symptoms due to myriad physical, mental and psychosocial factors. Females are more prone to develop anxiety while males have high tendency to develop depression. The overall prevalence rate of depression and anxiety in dialyzed patients is about 66% and 61% respectively. Moreover, the mechanisms involved between psychological factors and adverse medical outcomes in dialyzed patients are discussed. Hospital Anxiety and Depression Scale (HADS), Beck Depression Inventory (BDI) are some of the screening tools to diagnose depression and anxiety. Management of dialyzed patients with depression and anxiety is a key role to improve their quality of life. Besides pharmacological treatment, cognitive behavioral therapy and life style modifications have immense fortune on patient's survival. More attention should be given to depression and anxiety care in context to dialyzed patients management. This review provides a selective overview on prevalence rate, etiology, coping mechanisms and treatment in complex patients and also management strategies are appraised and discussed from the relevant literature.

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A REVIEW ON CONVENTIONAL TREATMENT OF PEPTIC ULCER DISEASE

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ABSTRACT

Peptic ulcer disease is the widespread disease, effecting around 5-10% of global population. However, based on significant and racial versions, two most common etiological reasons are persistent infection of H. pylori and usage of NSAIDs. Prognosis can be primarily based on endoscopy and lively such of H. pylori presence. Eradication therapy of H. pylori is pleasant preference to achieve final cure of peptic ulcer disease. Numerous global guidelines, recommended triple therapy as first line therapy which includes proton pump inhibitor, amoxicillin, clarithromycin. Combination therapy suggest the decreased efficacy over a period of time. Several new treatment options or changes are already established few years back to overcome the therapy. Primary purpose in growing the antibiotic resistance in the presence clarithromycin, metronidazole strains. The aim of this study is to describe the occurrence and primary therapeutic options of the peptic ulcer disease.

KEYWORDS: Peptic ulcer disease. Pylori, NSAIDs, Proton pump inhibitors.

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A PROSPECTIVE OBSERVATIONAL STUDY ON DRUG UTILIZATION OF ANTI-DIABETICS IN GOVERNMENT GENERAL HOSPITAL, VIJAYAWADA

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Abstract:
Diabetes Mellitus refers to group of diseases that affect how body uses blood sugar(glucose). Glucose is vital for health because it's an inportant source of energy for the cells that make up muscles and tissues. Anti-Diabetic Therapy is to return blood sugar to a safe threshold and reduce the risk of complications such as Heart attacks and stroke, Neuropathy, Nephropathy, Retinopathy and Vision loss, Hearing loss, Foot damage, Depression etc. The classification include: For TYPE-1 Diabetes Insulin is given and for TYPE-2 Diabetes drugs are classified into different types Sulfonylureas, Biguanides, Meglitinides, Thiazolidine diones, Alpha glucosidase inhibitors, Dipeptidyl peptidase (DPP4), Glucagon like peptide (GLP-1). The World Health Organisation (WHO) has shown that about 79.4 million people in the world are likely to suffer from diabetes mellitus by 2030. This is the prospective observational study and was conducted in the government general hospital, Vijayawada. The study period is about 4months ie, September to December2019. All the prescriptions of OP, IP departments and Diabetic camp were included. The use of Antidiabetics in the teritiary care hospital was found to be more and in department of Outpatient was found to be 195788, Inpatient department found to be 26,636 and in diabetic camp found to be 338222. diabetic camp consumption of antidiabetic drugs was found to be more than the Inpatient and Outpatient Departments.

Keywords: *Diabetes mellitus, Antidiabetic drugs, Drug Utilization, In-patient, Out-patient, Diabetic camp.*

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DRUG UTILIZATION STUDY OF ANTIHYPERTENSIVE DRUGS

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ABSTRACT:

Hypertension is a condition in which the force of blood against the artery walls is too high .it is a major global public health issue and non communicable disease .it is a major health problem because it leads to initiation and progression of major cardiovascular complications , renal and cerebrovascular complications. Anti hypertensive drugs such as Ace inhibitors, Angiotensin receptor blockers, calcium channel blockers, Beta blockers are used for management of hypertension. Based on its severity and progression hypertension can be reduced by early detection and appropriate therapy for elevated blood pressure. The aim of the study is to analyze the utilization pattern of anti hypertensive drugs.

Study-1:

Cross sectional observational study aims at analyzing the utilization pattern of antihypertensives used for treatment of hypertension at a tertiary care hospital which include 286 prescriptions of patients suffering from hypertension

Study-2:

Data from prescription of drugs were recorded in pre specific case record forms and analyzed for drug utilization parameters with sample size of 127 patients was conducted in OPD of king Georges medical university were included in the study

Study-3:

Was conducted in Outpatient Department of Medicine in Government Medical College, Thrissur.with sample size of 100

KEY WORDS: Antihypertensive, prescription pattern study and Antihypertensive drug utilization.

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SOCIOECONOMIC INEQUALITIES IN THE PRESCRIPTION OF ORAL ANTICOAGULANTS IN STROKE PATIENTS WITH ATRIAL FIBRILLATION

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ABSTRACT

Anti-coagulants are known as blood thinners. These drugs prevent recurrences and existing blood clots from enlarging but do not dissolve them. These are widely used in, Stroke (CVA), Atrial Fibrillation (AF), Coronary Artery Disease (CAD), Vascular surgery and other conditions where clots are formed. About 17million people die from cardiovascular diseases every year all over the world and about 5million die from heart attack & stroke. Intravenous (IV) anticoagulants are used for immediate effect and oral anticoagulants for maintenance therapy. Anticoagulants are highly expensive.Commonly used oral anticoagulants are Dabigatran, Rivaroxaban, Apixaban and Warfarin. There are many socioeconomic inequalities are seen in the prescription of oral anticoagulants in stroke patients with AF. In this study socioeconomic inequalities were described based on their age, sex, economic status, birth country, diseased states and education. To reduce economic inequalities in low income and uneducated patients cost effective drugs can be prescribed.

INTRODUCTION

Cardiovascular disease is a serious condition which effect heart and blood vessels.[1,2] Throughout the world high morbidity and mortality is associated with cardiovascular diseases. The various risk factors are elevated cholesterol and blood pressure levels, excessive smoking habits, diabetes, malnutrition and obesity.[3] About 17million people die from cardiovascular diseases every year all over the world and about 5million die from heart attack & stroke. AF patients are up to 5 times likely to have an ischemic stroke when compared to non-atrial fibrillation patients. Men are estimated to have 2.7 million new cases each year, while woman have 2 million by 2030, the European Union expects 4-17 million AF patients with 120000-215000 new patients Diagnosed each year. By the year 2050, the incidence of AF is expected to have increased 2.5 – fold.[4] In comparison to studies from other parts of the world, prevalence of AF in India was 0.196% lower.[5] In USA, its prevalence is in rise and is expected that 12 million people gets affected by 2050.[6] Atrial fibrillation affects the majority of people suffering from cardiovascular diseases globally. It is the most common supraventricular arrhythmia, which is associated with increased risk of stroke.[4,7] AF has a detrimental effect on one's quality of life and has a substantial impact on one's ability to function and raises the risk of hospitalization.[4] When the blood flow to part of your brain is disrupted or diminished, brain tissue is deprived of

CASE STUDY ON PAEDIATRIC TYPE-1 DIABETES MELLITUS WITH DIABETIC KETOACIDOSIS

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Introduction

Type 1 diabetes mellitus (T1DM) is on increasing with a trend of 3–5% increase/year. India has three new cases of Type-1 Diabetes Mellitus /100,000 children of 0–14 years.Type -1 Diabetes is also known as juvenile diabetes. It is a condition in which the body is unable to make sufficient insulin. Juvenile diabetes is an autoimmune disorder. The cells that make the insulin in the pancreas are destroyed by the immune system in the body. The insulin is a hormone which helps the glucose in the blood to enter into the cells which can be used as a fuel to the body. When this glucose is unable to enter the cells, this builds up in the body which causes rise of glucose in the blood also called as hyperglycaemia. This affects all organs in the body eyes, heart, kidneys, nerves etc. It is a chronic condition and can start at any age. The insulin is not producing by pancreas so it must be replaced with insulin injection or insulin pumps.Thus, type 1 diabetes is also called insulin-dependent Diabetes Mellitus. It requires lifelong treatment. The management of diabetes for children should not be extrapolated from adult diabetic care. This is diagnosed by the fasting blood glucose, random blood glucose and also oral glucose tolerance test. Glycated haemoglobin (HbA1c) is also a tool to diagnose. The children with the Type-1 Diabetes commonly present with polydipsia, polyuria and weight loss and approximately a 3rd % with diabetic ketoacidosis. Most people around 90%who are newly diagnosed with type 1 diabetes have antibodies against specific beta cell proteins, insulin, glutamate decarboxylase, islet antigen-2, zinc transporter -8 etc.The transplantation of islets or the clinical pancreas has been considered a feasible treatment option for the patients with T1DM with poor glycaemic control. However, the severe shortage of pancreas and islets derived from human organ donors and the complications that have been associated with transplantations, high cost, and limited availability of procedures remain as limitations in the widespread application of these strategies. Stem cell therapy has a

HEALTH RELATED QUALITY OF LIFE AND DEPRESSION AMONG THE INJECTING DRUG USERS

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ABSTRACT: Psychiatric disorders like Anxiety, Depression and Suicidal tendency are being an important public health issue worldwide. Whereas the mental disorders are most probably seen among the people who inject drugs. Even though there are comorbidities in drug users more attention was given to mental disorders and other chronic infections like HIV (Human Immune Deficiency Virus) and Hepatitis due to involvement of needle exchange process. Awareness about the disease plays a key role in the screening and treating of particular diseases especially in case of HIV and Hepatitis to increase the Quality of Life (QOL).

STUDY 1: It was a Cross-sectional study conducted in PWID (People Who Inject Drugs) at different geographical areas in Delhi for 2 months study was carried out in April and May of 2012. The findings from this study profile an impoverished, vulnerable and isolated population of men who inject drugs and whose lives are shaped by a significant level of psychosocial distress. The prevalence of depressive and anxiety symptoms among this population of men who inject drugs in Delhi was very high and suicidal thoughts and acts were disconcertingly common. **STUDY 2:** It is a Cross-sectional study which was conducted in 11 main land Scottish health boards in Scotland. Study was carried out in January to November 2010. This is the 1st study to compare health-related QoL in PWID who are chronically infected with HCV and aware, with those who are chronically infected but unaware of their infected status and those who are not chronically infected and the finding that awareness of infection status among chronically HCV- infected current PWID is associated with a reduction in QoL implies that unless clinicians are prepared and have the means, to act on a HCV diagnosis, the case for promoting the identification of infected individuals is weak.

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A NEW PROMISING STRATEGY ISLET MACROCELL ENCAPSULATION DEVICE IN THE TREATMENT OF TYPE I DIABETES

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ABSTRACT

Islet transplantation can treat the foremost severe cases of type I diabetes (TID), but it currently requires deceased donor pancreatic as an islet source and chronic immunosuppression to forestall rejection and recurrence of autoimmunity. Stem cell derived insulin-producing cells can overcome the shortage of organ donors, while cell encapsulation can reduce or eliminate the necessity for immunosuppression, reduce the risks related to with the islet transplantation process and potentially prolonged can survive. A range of materials are used to test for microencapsulation in various animal models and a few materials were shown to induce immunosuppression in islet grafts without the necessity for chronic immunosuppression. Despite the initial success of microcapsules within the NHP model, the combined use of islet transplantation and microencapsulation has not yet been successful in clinical trials.

KEYWORDS: Type I diabetes (TID), Immunosuppression, Microencapsulation, Islet transplantation.

INTRODUCTION

Type I Diabetes Mellitus (TIDM) also known as insulin-dependent diabetes mellitus, is an autoimmune disease that causes a progressive destruction of the insulin-producing pancreatic β cells. As a result, patients require exogenous insulin to maintain normal blood glucose levels. In patients with TIDM, long-term hyperglycaemia often causes complications such as nephropathy, neuropathy and retinopathy. According to a report from the American Diabetes Association (ADA), there are nearly three million children and adults living with TIDM in the USA and millions of others affected worldwide. Management of TIDM and other associated complications is burdensome to both individuals and to society as a whole.

About 422 million people worldwide have diabetes until 2020, the majority living in low-and middle-income countries and 1.6 million deaths are directly attributed to diabetes each year. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades. It is estimated that there are around 601 thousand children worldwide who have type I diabetes. Type I diabetes also known as juvenile diabetes or insulin-dependent diabetes, is a condition in which the body cannot produce insulin, requiring people with the condition to take artificial insulin to stay alive. Insulin injection is a common method to directly control blood glucose levels. However, intensive insulin therapy can induce more frequent episodes of hypoglycemic symptoms in certain populations of patients with TIDM. T1D is an autoimmune disease in which beta cells within the pancreatic islets are destroyed by selecting independent responses against beta cell auto antigens. The pathophysiology of beta cell destruction in T1D has been reviewed previously. Beta cells are responsible for secreting insulin, which regulates glucose metabolism and homeostasis. Currently, patients with T1D are dependent on external insulin injections but insulin injections do not prevent serious and chronic T1D complications, which can be life-threatening4. In addition, severe hypoglycaemia is often diagnosed by patients as a result of external insulin injections. Hypo ignorance about 6 to 10% of all people who die of T1D. In addition to the widespread use of novel analogues of insulin novels, pump therapy, and glucose sensors, uncertainty persists. Restoring normoglycemia without increasing the risk of severe hypo can have a significant impact on the well-being of people with T1D. Pediatric pump therapy with automatic insulin suspension reduced

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NEURODEGENERATION DUE TO INSULIN RESISTANCE IN ALZHEIMER'S DISEASE

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ABSTRACT

Alzheimer's Disease (AD) is a neurodegenerative disorder in which there will be decrease in the memory and cognition impairment. This was 1st described by in 1906. The name Alzheimer's disease is coined by after the name of the scientist Dr. Alois Alzheimer. AD is characterised by the accumulation of Amyloid beta peptides (Aβ) plaques extracellularly and there will be intracellular aggregation of Neurofibrillary Tangles (NFTS). NFTS are formed due to tau protein hyperphosphorylation. This accumulation of NFTS and plaques leads to necrosis of the brain tissue. There is growing evidence that interlink between Diabetes Mellitus type II (DM type II) and AD. There is almost doubled risk of AD for the patients with type II DM insulin resistance in DM type II is the underlying mechanism for the occurrence of AD in type II DM patients. Insulin is helpful for the dendritic sprouting, cell repair and growth. Hence insulin helps in maintaining the healthy neuronal tissue. With the insulin resistance there will be inhibition of the insulin degrading enzyme. This enzyme is useful for the degradation of the insulin as well as Aβs in the brain tissue. As insulin degrading enzyme is inhibited there will be amyloid beta cells in the brain tissue, which ultimately leads to damage of the brain tissue.

KEYWORDS: Alzheimer's Disease (AD), Amyloid beta peptides (Aβ) plaques, Neurofibrillary tangles (NFTS), Intranasal (NAS) insulin and Diabetes Mellitus type II.

INTRODUCTION

The term AD was named after the German physician "Dr. Alois Alzheimer". There are 2 - forms of AD;

1. Familial form of AD (early stage) – It has symptoms like confusion, lapses of short-term memory loss, mood swings and these subjects are more withdrawn (it is a very rare form of the disease that occurs in people between the age of 30 - 60 years).

2. Sporadic form of AD - Is late onset AD which has symptoms like that of the early onset AD. This usually occurs at the age of 60 years and above.

In this disease there will be accumulation of Amyloid beta peptides (Aβ) extracellularly and Neurofibrillary Tangles (NFTs) intracellularly in the brain tissue. Accumulation of NFTs occurs due to hyper phosphorylation of tau proteins. Accumulation of NFTs and amyloid beta proteins leads to necrosis of the brain tissue.[1]

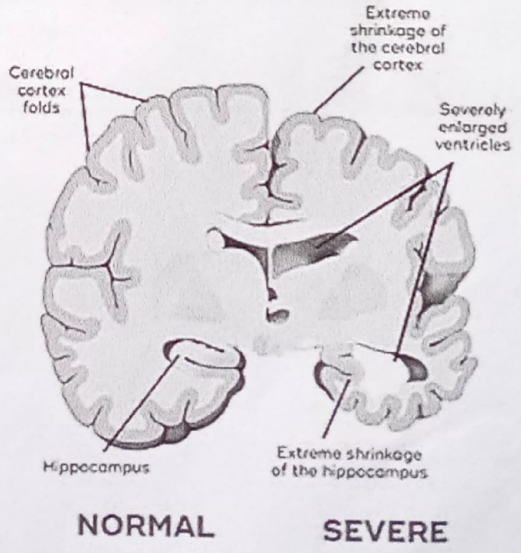

Figure 1: Normal Brain (Vs) Alzheimer'S.

COMPARISION OF SAFETY AND EFFECTIVENESS OF ORAL AND IV ANTICOAGULANTS IN ATRIAL FIBRILATION PATIENT'S IN TERTIARY CARE HOSPITAL

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ABSTRACT : Anticoagulants are madicines that help p to prevent blood clots. They are given to people at high risk of getting clots, to reduce their chances of developing serious conditions such as stroke and heart attacks. A blood clot is a seal created by the blood to stop bleeding from wounds. However, the blood is not actually made any thinner. It just does not clot so easily whilst you taken an anticoagulant. Among 321,501 patients, use of different oral anticoagulants included Vit-K antagonist (VKA:35.0%), APIXABAN (27.2%), RIVAROXABAN (31.1%) and DABIGATRON (6.6). The non-vitamin K antagonist oral anticoagulant has been a major advance for stroke prevention in atrial fibrillation. Aimed to evaluate the effectiveness and safety of oral and iv anticoagulants. These are mostly used in , Stroke, Atrial Fibrilation(AF), Coronary Artery Disease(CAD), Vascular surgery and some other conditions where clots should be formed.

Key Words: Anticoagulants, Atrial Fibrilation, Stroke

INTRODUCTION: [1]Anticoagulants are the cornerstone therapy for thrombosis prevention and treatment. While these are commonly employed, anticoagulants use is often associated with adverse drug events and increased readmission rates[1]. Anticoagulants solutions are used to keep restoration of stored whole blood and blood fractions. The result of direct oral anticoagulants in non-valular atrial fibrillation should be judge in actual condition. [2]Although vit-k antagonist (VKAs) are highly effective in the prevention and treatment of thromboembolic events, these are having drug and food interactions. Alternatives of VKAs are Direct Oral Anticoagulants (DOACs) and inhibits the coagulation by directly binding the active site of thrombin(dabigatron) or factor 10 A i.e.(rivaroxaban and apixaban)[2].NAXOS (Evaluation of apixaban in stroke and systemic embolism prevention in patients with Non valular Atrial Fibrillation) focused to compare the safety, effectiveness and transience of apixaban with Vit-K antagonists, rivaroxaban and dabigatron in oral anticoagulant-naïve patients with non valular

Atrial Fibrillation.[3] Anti coagulants treatment should not used for certain patients who are suffering with health problems because they increase the risk of bleeding. Patient who is pregnant should not take these anti coagulants.[3] Four new oral anti coagulants compare beneficial with warfarin for stroke prevention in patients with Atrial Fibrillation. However the stability between efficacy and safety in branch needs better definition. [4]The main results were stroke and systemic embolic events, Ischemic stroke, haemorrhagic stroke, all-cause mortality, Myocardial Infarction, major bleeding, intracranial haemorrhage and gastro intestinal bleeding. [5]An anticoagulants that gives some of the useful attributes (eg, wide therapeutic index, less complex pharmacodynamics) of the newer

An OVERVIEW ON DANDY WALKER SYNDROME

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Abstract:

Dandy-Walker syndrome is a rare disorder characterized by complete or partial agenesis of the vermis, cystic dilatation of the fourth ventricle, and an enlarged posterior fossa. The etiology is unknown but some reports are associated with risk factors like virus infections (rubella, toxoplasma, and cytomegalovirus) and alcohol consumption. The reported incidence varies from one in 25000 births to one per 50,000 births. An increase in the size and pressure of fluid spaces surrounding the brain may also present. Symptoms often occur in early infancy, include slow motor development and progressive enlargement of the skull. In children, symptoms of increased intracranial pressure such as irritability and vomiting, and signs of Cerebellar dysfunction as unsteadiness, lack of muscle coordination, or jerky movements of the eyes may occur. Other symptoms include increased head circumference, bulging at the back of the skull, abnormal breathing problems, and problems with nerves that control the eyes, face, and neck. Dandy-Walker Syndrome is sometimes associated with disorders of other areas of the central nervous system, including the absence of the area made up of nerve fibers connecting the two cerebral hemispheres (corpus callosum) and malformations of the heart, face, limbs, fingers, and toes. Diagnostic tests such as MRI, CT scan, and ultrasound have been done for diagnosis of DWM. The surgical method of treatment are been done.IN children older than 1year, endoscopy third ventriculostomy as first-line treatment in DWM, along with Ventriculoperitoneal (VP), Or Cystoperitoneal (CP) Shunts. Along with vocational therapy, physical therapy, occupational therapy, and genetic counseling must be given to family members.

Key words: dandy walker syndrome, dandy walker malformation.

USAGE OF PROPHYLACTIC ANTIBIOTICS TO PREVENT POSTOPERATIVE INFECTION IN CESAREAN SECTION

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ABSTRACT:

Cesarean section delivery is a major operation with great potential benefit but also with the substantial risk for both mother and baby with 5 to 20 times greater when compared to normal vaginal delivery. The major postoperative infection after c section is fever, endometritis, surgical site infection, urinary tract infection the infection is usually by aerobic, anaerobic microorganisms. usage of antibiotic prophylaxis will reduce the incidences of postoperative infection. Selection of antibiotics for prophylaxis based on the timing of administration, route of administration, duration, and its efficacy. Various studies in the past have demonstrated the role of different antibiotics use in cesarean section but no ideal drug regimen and multiple-dose regimen has been found to be superior. This article reviews various recent past studies regarding the usage of prophylactic antibiotics in the c section.

Keywords: cesarean section, post-operative infections, antibiotic prophylaxis

BACKGROUND:

Cesarean section is one of the major surgical procedures in obstetrics and gynecology practice worldwide, with potential benefits and substantial risk for both mother and baby, and morbidity and mortality rates are higher when compared to normal vaginal delivery. Women undergoing cesarean delivery is a major risk factor for postpartum infection with 5 to 20 times greater when compared to normal vaginal delivery. The major complications after cesarean delivery are fever, surgical site infection, endometritis, and urinary tract infection. Endometritis is an infectious complication in 9% to 65% of patients delivered by cesarean section. Women undergoing cesarean delivery are a higher chance of infection.

Cesarean without indication would bring many complications for both mother and baby. Maternal death caused by cesarean delivery 3 times more when compared to vaginal delivery. The most common complication seen in babies born by cesarean section is transient tachypnea and respiratory distress syndrome. Modern cesarean delivery begins to reduce maternal and newborn complications but nowadays c-section is not used only to save the mother and baby it gradually being assumed as luxurious by some communities. It is essential, to decrease such a phenomenon, making the mothers aware of the risks of cesarean delivery, and establishing counseling sessions as well to eliminate the mothers' fear of vaginal delivery. The major microorganisms responsible for endometritis are aerobic gram-negative bacilli, principally E. coli; anaerobic gram-negative bacilli, principally Bacteroides species and Gardnerella vaginalis; aerobic gram-positive cocci, primarily Group B and Group D streptococci; and anaerobic gram-positive cocci, specifically Pepto coccus species and Pepto streptococcus species

Recent data also indicate that primary cesarean deliveries in the absence of obstetric indications are rapidly rising, reflecting both shifting obstetric practices and maternal preference.10 If these trends continue, cesarean deliveries will make up approximately 50% of the more than 4 million annual deliveries by 2020. Therefore, the health and economic burden of post-cesarean infection will likely continue to rise. Cesareans without indications, as compared to Normal Vaginal Delivery (NVD), would bring about many complications for both mother and the baby. Antibiotics administered before the contamination of previously sterile tissues or fluids are deemed „prophylactic antibiotics". Prevention of surgical site infection is the major goal of antibiotic prophylaxis. For optimal prevention of postoperative wound infection, it is necessary to follow a series of general principles. This includes the type of surgical intervention, class, and character of antibiotic used, its time, and route of administration

MATERNAL AND NEONATAL OUTCOMES OF WOMEN WITH DIABETES IN PREGNANCY.

5.75

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ABSTRACT:

Among the pregnant women 2 to 17.8% develop the gestational diabetes. One in 100 pregnancies are having pre- GDM. the prevalence of diabetes in pregnancy may increase day by day. it results in increase the burden of pregnancy. Women with diabetes in pregnancy may affect the both mother and fetus metabolism. Pregnancy with diabetes can predispose the fetus to several alterations in organogenesis, growth restrictions congenital anomalies, shoulder dystocia, hypoglycemia and mother to some diabetes related complications (retinopathy, nephropathy), emergency c- section, polyhydramnios, preterm delivery and still birth. Women diagnosed with diabetes in pregnancy start their treatment with diet and lifestyle modifications. Keep their blood sugar levels in control. Those with pre-existing type diabetes must start a glycemic control preferably before conception. Of these procedures are performed getting to keep normal or near normal as possible to avoid adverse peri-natal outcomes to the mother and to the fetus . The objectives of this study were to estimate the burden of diabetes and to explore the incidence of adverse pregnancy outcomes related to pre-gestational DM (Pre-GDM) and gestational DM (GDM) among the pregnant population.

Keywords: Pre-existing gestational diabetes, Gestational Diabetes, Maternal Outcomes, Neonatal Outcomes.

INTRODUCTION:

Pregnancy is related to changes in insulin sensitivity which can cause changes in plasma glucose levels. For women with known diabetes or for women who develop diabetes during the pregnancy, these changes can put outcomes in danger. (IDF). It's a major public ill health in the world consistent with recent (2017) International Diabetes federation(IDF) estimates, Diabetes affects approximately 14% of pregnancies worldwide, representing 18 million births annually. It is estimated that by the year 2030 quite 360 million people will have DM. And because the burden of disease increases the management of pregnancy of pregnancies complicated by DM are going to be a part of the daily obstetric practice in many regions of the world. With increasing the prevalence of diabetes in pregnancy there seems to be a rise the prevalence of adverse outcomes of pregnancy. The multiple risk factors are related to women who are developing GDM, Obesity and maternal age are major risk factors to develop GDM. In many studies states that, About 60% pregnant women with GDM later develops TYPE II Diabetes. Rates of adverse neonatal outcomes are 3 -9 times greater than infants of diabetic mothers compared with those of non-diabetic mothers.women with diabetes in pregnancy may experiences at least one adverse outcome in entire gestation . hence, this study is aimed to estimate the incidence of adverse outcomes of pregnancy associated with Diabetes.

A REVIEW ON STEM CELL THERAPY IN OSTEOARTHRITIS: EARLY DIAGNOSIS AND STEM CELL THERAPY INDUCED CARTILAGE REGENERATION

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ABSTRACT: Osteoarthritis (OA) is a chronic disease with primary supply of painful discomfort, incapacity, and socioeconomic price worldwide. The epidemiology of the disease is complicated and multifactorial, with genetic, organic, and biomechanical additives. Aetiological factors may also be joint specific. Joint replacement is an effective treatment for symptomatic last-stage ailment, even though functional effects may be poor and the lifespan of prostheses is constrained. Consequently, the main aim is shifting to disease prevention and the treatment of early-stage osteoarthritis. Joint-replacement interventions implying disease progression include life-style modification and pharmaceutical and surgical modalities. This assignment is tough due to the fact regular imaging techniques can locate only superior changes and the relation between ache and structural degeneration isn't determined. Though, advances in each imaging and biochemical markers offer ability for analysis and as final results measures for brand new treatments. No cures have confirmed efficacy in stopping the development of this degenerative joint disorder. Mesenchymal stem cells (MSCs) are a multipotent. MSCs are endogenous population of progenitors capable of differentiation to musculoskeletal tissues. MSCs have a well-documented immunomodulatory function, handling the entire inflammatory reaction through paracrine signalling. Given these characteristics, MSCs were proposed as a probable regenerative cellular therapy supply for patients suffering with OA. Research efforts are focused on determining the appropriate source for derivation, as MSCs are local to numerous tissues.

Key words: Arthritis, Osteoarthritis, cell therapy, cartilage regeneration, mesenchymal stem cell and adipose tissue derived stem cell therapy.

INTRODUCTION: Osteoarthritis is the most prevalent joint disease worldwide, affecting an anticipated 10% of male and 18% of female population over 60 years of age.[1] Arthritis is the constant supply of disability among adults within the united states in 2003, the disorder concerned 50 million Americans and this variation is anticipated to increase to 67 million through 2030.[2] Studies on the predominance of OA in India present clashing outcomes because of contrasts in incorporation models and review strategies. The predominance of knee OA dependent on clinical standards has been assessed to be 4.4% and 3.4% in country and metropolitan India, separately, when adapted to segment divergence.[3] The hip and knee are the fundamental massive joints suffering from OA. Despite the fact that estimates of the superiority of hip and knee OA range significantly relying on whether or not the disease is described by each sign and symptoms and radiographic modifications or via radiographic standards alone knee OA

GUILLAIN- BARRE SYNDROME WITHIN THE POST –PARTUM PERIOD: A CASE REPORT

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ABSTRACT:

Predominant form of GBS (Guillain – barre syndrome) was acute inflammatory demyelinating polyneuropathy (AIDP). The danger of GBS increases in third trimester and first two weeks of pregnancy.GBS is rare in pregnancy with an incidence between 11.2 and 1.9 cases per 100,000 people annually. Most patients complain of paresthesia, numbness, or similar sensory changes. The pain related to GBS is described as throbbing or aching in nature. Surgery and anesthesia may trigger the syndrome and in rare incidence vaccination may increase the chance of GBS. It's occurrence in pregnancy is related to an increased need of ventilator support, and a rise in maternal mortality up to 7% and 20% are disabled after a period of 1 year. Here, we report a case of a 21-year-old primigravida came with complaints of weakness of lower limbs and unable to walk.

KEY WORDS: GBS, Post-partum period, Paresthesia, C section

INTRODUCTION:

GBS Guillain – Barre syndrome (GBS) represents a heterogeneous group of immune mediated poly neuropathies generally manifests as a symmetric motor paralysis with or without sensory and autonomic disturbances. Guillain–Barré syndrome (GBS) is generally characterized as a postinfectious, acute flaccid paralysis with albumin cytologic dissociation: that is, high levels of protein in the cerebrospinal fluid combined with a normal cell count.GBS manifests as an acute inflammatory poly radicle neuropathy with resultant weakness and diminished reflexes. Paresthesia begins within the toes and finger tips, progressing upwards, but does not extend beyond wrist and ankles. It occurs mainly within the third trimester and the first two weeks of postpartum period. Gastrointestinal tract infection has been reported in approximately two-thirds of GBS patients. Epidemiology studies have shown that Campylobacter jejuni, Mycoplasma pneumonia, Hemophilus influenza, cytomegalovirus, and Epstein-Barr virus infection are strongly associated with GBS. Molecular mimicry and cross-reactive immune triggers play an important role in the immunopathogenesis of GBS. Antibodies to gangliosides following infection with Jejune have been demonstrated in patients with GBS.

Impact Of Premature Menopause On Neurological &Cognitive Functioning, Sexuality, Bone Health and Thyroid

5.75

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Abstract:

Menopause is a phase of Female reproductive infirmity specified by depletion of ovarian follicles and termination of menstruation, begins at a middle age of 51 in developed countries. Premature menopause (PM) refers to Hyper gonadotropic amenorrhea occurring at (Or) before the age of 40yrs. At the age of 40yrs,1% of women affected by premature menopause. Though it is a natural process, these women are at the risk of premature death, neurological disease, cognitive, psycho sexual dysfunction, mood disorders, osteoporosis, thyroid disorders, ischemic heart disease and infertility. As the age of menopausal onset decreases, the deleterious effects are increased. as these consequences have a higher impact on the women's health, awareness should be created regarding these risks to maintain the better quality of life.

Key words: menopause, premature menopause, consequences, neurological, cognitive, osteoporosis, sexual dysfunction, thyroid.

INTRODUCTION:

Menopause is a phase of Female reproductive infirmity specified by depletion of ovarian follicles and termination of menstruation, begins at a middle age of 51 in developed countries. Although, a remarkable number of women enter menopause early/ prematurely (<40) as a result of Hysterectomy ± oophorectomy, premature ovarian insufficiency (or) Iatrogenic damage from surgery, radiation(or) chemotherapeutics (Erin L Scott, Quan-guang zhang et al,2015).

The end of women's reproductive life and spontaneous ovarian function prompt the menopause. Endocrine changes that accompany menopause includes a gradual erratic decline in estrogen levels over several years, which drop to a low level in the post menopause (J Ryan Et al,7 May 2014).

As with the gradual increasing in the life expectancy, the mean women go through natural menopause will spend least 30yrs of age (OR) one third of her life with long term symptomatic and metabolic complications in the Hypogenic state. Due to low estrogen levels, in 90% of women during these years having variety of symptoms, even affects the quality of life (Subrat panda, 2018).

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Economic Burden of Cancer and Their Variations along with Incident Trends, Challenges, and Opportunities in India

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ABSTRACT

Cancer is emerging as a major public health concern in India with the ongoing demographic and epidemiological transition. This paper uses a nationally representative household survey to look at the general prevalence and economic burden of cancer in India. The average out of pocket spending on inpatient care in private facilities is about three-times that of public facilities. These efforts should specialize in the ten cancers contributing the very best DALYs in India, including cancers of the stomach, lung, pharynx aside from nasopharynx, colon and rectum, leukemia, oesophageal, and brain, and Systema nervosum, additionally to breast, lip and oral cavity, and cervical cancer, which are currently the main target of screening and early detection programs. India's current burden of 10, 00,000 incident cancers is that the results of an epidemiologic transition, improved cancer diagnostics, and improved cancer data capture. The increasing incidence of cancer in India with wide interstate variations offers useful insights and important lessons for developing countries in managing their increasing cancer burdens. Overall, the cancer epidemiology literature from India is thinly dispersed. More studies with robust designs representing all parts of the country are currently needed.

Keywords: Cancer, Epidemiological transition, DALYs (Disability-Adjusted Life-Years), Systema nervosum, Cancer burden.

INTRODUCTION

The term "Cancer" is derived from the Greek word "Karkinos" (for crab) which refers to a generic non-communicable disease (NCD) characterized by malignant (cancerous or neo-plasms) abnormal cells (tumor/lump) growth in any part of the human body.
However several forms of cancer have been detected, the most common sites of these tumors in human bodies are lungs, stomach, colorectal, liver, and breasts [1].

One of the major reasons for not being able to implement a screening program in India has been lack of workforce - physicians, health workers, technical staff, and pathologist to review pathological material. in increasing public awareness, supporting screening, early