SCIENTIFIC JOURNAL PUBLICATIONS

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Dept. of Pharmacology
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DESIGN, SYNTHESIS, CHARACTERIZATION, MOLECULAR DOCKING STUDIES AND BIOLOGICAL ACTIVITY OF NOVEL QUINAZOLINONE DERIVATIVES AS POTENTIAL EGFR INHIBITORS

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Abstact:
A series of novel quinazolinone derivatives (II-(3a-3j) [(E)-7-chloro-2-(4-((4-substituted benzylidene) amino) phenyl) quinazolin- 4(3H)-one] were synthesised, characterized and biological screened for their in vitro antibacterial, anthelmintic and anticancer activity. All compounds, were synthesized through two steps process and structurally conformed by FTIR, ^{1}HNMR and Mass spectroscopy. Their anticancer activity was assessed using MTT method against MCF-7 and SKOV3 cell lines, the anthelmintic activity was carried out by using Indian Earth warms and the antibacterial activity was carried out by Cup-plate diffusion method. In addition, molecular docking studies was assessed using Autodock Vina. The compound **II-3c** (IC_{50} value of **23.24µg** against MCF-7 and **21.05µg** against SKVO3) exhibited good anticancer activity compared with Doxorubicin as standard. In anthelmintic and antibacterial screening, the compounds, **II-3c, II-3h** and **II-3j** have shown excellent anthelmintic activity and compounds **II-3b, II-3d, II-3f, II-3h** and **II-3j** showed significant antibacterial activity.

Key Words: Quinolone, Anticancer, antibacterial and anthelmintic activities, Molecular Docking, MCF-7 and SKOV3 cell lines.

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Design, Synthesis, Characterization, Molecular Docking Studies of Novel Quinazolinone Derivatives as Potential EGFR Inhibitors

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Abstract
A series of some novel quinazolinone derivatives III-3(a-j) were synthesized by a conventional method via cyclization and Schiff's base mechanism. All the synthesized compounds gave a good yield between 78-86%. Final structure was confirmed by FT-IR, LC-MASS and ^{1}H NMR analytical data. The novel Quinazolinone derivatives (III-3a-3j) are screened for anticancer activity against MCF-7, SKVO3 Cell lines by MTT assay method. From the resulting data, the compound **III-3i** (IC_{50} value of **0.035 µM** against MCF-7 and **0.1 µM** against SKVO3) exhibited good anticancer activity compared with Doxorubicin as standard. The molecular docking studies of these novel Qunazolinone showed good agreement with the biological results their binding pattern and affinity towards the active site of EGFR was examination.

Keywords
Quinazoline, Molecular Docking, Anti-cancer activity, MCF-7 and SKVO3 Cell lines, Doxorubicin.

INTRODUCTION:
In synthetic chemistry conventional method plays a vital role in the progress of chemical science. Hybridization of bioactive natural and synthetic compounds is one of the most promising novel approaches for the design of hit and lead compounds with new molecular structures. Design of new drug-like small molecules based on the pharmacologically active scaffolds is a rational and a promising direction in modern medicinal chemistry. A number of compounds have been synthesized by the combination of biologically active pharmacophores and utilized by medicinal chemists to develop novel therapeutics agents with a broad range of pharmacological activities (1-5). Some Qunazolinone conjugates showed remarkable anticancer activity with 50% growth inhibition (GI50) values of 0.02 µM and 0.49 µM against central nervous system (SNB-75) and leukemia (K-562) cell lines, respectively (6). The rings heterocyclic compounds with five-membered rings bearing both sulphur and nitrogen atoms are privileged essential organic structural scaffolds in compounds used as medicinal drugs[7-9]. Due to their high potency and efficacy towards therapeutic properties, tremendous efforts have been to novel quinazolinone bearing derivatives. All these structural motifs are having numerous therapeutic properties such as anti-inflammatory, antihypertensive α-blocking, anti-leishmanial, neuroprotective agents in Parkinson's and Alzheimer's disease [10-12]. The qinazolinone ring systems is a beneficial structural element in medicinal chemistry and has wide-ranging application in the drug development process. Among the different Schiff's basses linked with other hetero nucleus compounds known in the literature for their potent biological active compounds with a very wide range of therapeutic properties

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Research Article

ANTIBACTERIAL AND ANTIFUNGAL ACTIVITY OF CRUCIFEROUS VEGETABLES - CAULIFLOWER, BROCCOLI

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ABSTRACT

Objectives: This work aims to analyze the antibacterial and antifungal activities of cruciferous vegetables such as cauliflower and broccoli.

Methods: Cruciferous vegetables act as a good source of natural antioxidants due to their high levels of carotenoids, tocopherols, and ascorbic acid. In this study, two cruciferous vegetables, such as cauliflower and broccoli, were selected for antibacterial and anti-fungal studies. The stems, flowers of cauliflower, and broccoli were extracted with 125 mL of ethanol and water by Soxhlet's apparatus for 6 h. Mueller Hinton agar and Sabouraud's dextrose agar medium were used for antibacterial and antifungal activity, respectively. The antibacterial and antifungal activities of each cauliflower, broccoli stem, and flower extract were determined using a modified Kirby-Bauer disk diffusion method. Standard antibiotics, gentamicin (25 µg/mL), and fluconazole (25 µg/mL) served as positive controls for antibacterial and antifungal activity, respectively.

Results: Broccoli stem (100 µg/mL) ethanol extract produced higher antibacterial activity (13 mm) against *Escherichia coli*. Cauliflower, flower (100 µg/mL) ethanol extract produced higher antibacterial activity (13 mm) against *Staphylococcus aureus*. Broccoli flower (100 µg/mL) ethanol extract produced higher antifungal activity (14 mm) against *Candida albicans*. According to the results obtained from this project, broccoli stems and flower ethanol extracts show very good antibacterial activity against Gram-negative microorganisms such as *E. coli* and *Pseudomonas aeruginosa*. Similarly, cauliflower, flower ethanol extract shows excellent antibacterial activity against Gram-positive microorganisms such as *Bacillus subtilis* and *S. aureus*.

Conclusion: Further analysis is recommended for the identification of active constituents responsible for these activities.

Keywords: Cruciferous vegetables, Antibacterial, Antifungal, Agar disk diffusion.

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INTRODUCTION

The popularity and consumption of vegetables from *Brassica* species are increasing because of their nutritional value. *Brassica* crops are used to reduce the risk of chronic diseases, including cancer and cardiovascular diseases. *Brassica* foods provide nutrients and health-promoting phytochemicals such as minerals, vitamins, carotenoids, soluble sugars, fiber, phenolic compounds, and glucosinolates [5]. Brassicaceae family vegetables are important sources of phenolic compounds in the human diet. They also contain derivatives of hydroxycinnamic, caffeic, chlorogenic, and ferulic acids, as well as flavonols (kaempferol derivatives, and quercetin derivatives), and anthocyanins (red cabbage) [6,7].

Cruciferous vegetables such as cauliflower, broccoli, cabbage, mustard, Chinese cabbage, carrot, Chinese kale, and turnip are edible plants that are low in calories, high in fiber, rich in vitamins and minerals, and have physiologic effects on humans [8]. Some important enzymes such as chitinase, glutathione transferase, and epoxide hydrolase are also found in cruciferous vegetables [9,10]. Indole and isothiocyanate, enzymatic products of myrosinase from glucosinolate found in cauliflower and cabbage, lower the incidence of tumor formation and have an antioxidative effect [11].

Broccoli is the richest source of different minerals, vitamins, and fiber. Broccoli contains potent antioxidants that support healthy cells and tissues in our body. Broccoli contains multiple active constituents that are responsible for an anti-inflammatory effect in animals. Multiple studies have shown that broccoli may have a cancer-preventive effect. Intake of broccoli may decrease blood sugar levels and control diabetes. This is due to its antioxidant and fiber content. Broccoli may help to reduce risk factors for various heart diseases and is used to prevent heart tissue damage. Broccoli contains Vitamin C, which is used to support a healthy immune response.

MATERIALS AND METHODS

Materials

Plant materials

The stems and flowers of cauliflower and broccoli used in this work were purchased in and around Vijayawada.

The common pathogenic microorganisms

The common pathogenic six microorganisms were used in this study, among these, two Gram-negative microorganisms, namely, *Escherichia coli* (National Collection of Industrial Microorganisms [NCIM] 2256), *Pseudomonas aeruginosa* (NCIM 2037), and two Gram-positive microorganisms, namely, *Bacillus subtilis* (NCIM 2710) and *Staphylococcus aureus* (NCIM 2794). All the tested strains were collected from the NCIM. Two other fungal organisms were also used in this study, namely, *Aspergillus niger* (ATCC 6275) and *Candida albicans* (ATCC 2091).

Instruments

The instruments used for this work are the Soxhlet apparatus, incubat (37°C), refrigerator (4–18°C), laminar airflow system, autoclave, hot oven, precision electronic balance, grinder, micropipette (100–1000 Bunsen burner, matches, and inoculating loop.

Chemicals

The chemicals used for this work are ethanol (research lab fine chemical industrial), dimethyl sulfoxide (DMSO) (research lab fin

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Review Article

TOXICITY ASSESSMENT AND EPIDEMIOLOGICAL STUDIES OF CHEMICAL SUBSTANCES – AN OVERVIEW

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Abstract:
Humans are exposed to many chemicals on daily basis but mostly toxicity obtained from single chemical exposure. Many factors are to be considered such as duration, route, frequency, timing of exposure, concentration while determining toxicity. To better understand the toxicity of chemical mixtures, a proper model system is essential. Shortcoming model systems are facing difficulties to find out appropriate balance of rigor and reproducibility in mixture toxicity studies. Certain questions will arise while comparing single to mixture toxicity. The most sensitive cases where toxicity leads to occur at lower doses is called as critical effect. They are based on the synergism, additivity, antagonism and potentiation. For toxicity evaluation to be more accurate, dose or concentration relevance should be considered and be below the threshold. Previously the work on chemical substances in done by the technology and methodology of the time but the recent studies are based on the progress of chemical substances in the mixture toxicology studies. Epidemiological risk assessment test are based on the chemical analytical tests. The evaluation of chemical substance is done by the quantitative or qualitative results. Amount of dose that is given to particular individual should be known for the study during exposure. This review consists of methods to determine the toxicity of using certain chemical substances and their epidemiological studies and functioning of chemical substances on human organs.

Keywords: *Toxicity, Chemicals, Dose, Synergism, Antagonism.*

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Review Article

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TRANSPLANT IMMUNOLOGY- AN OVERVIEW

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ABSTRACT

The process of replacing a cell, organ, or tissue with a healthy counterpart is known as transplantation. Every year, hundreds of organs, tissues, and cells are transplanted throughout the world. Human immunological reactions to the graft are the main obstacle to the transplantation of organs, tissues, and cells. The transplant will be rejected if the recipient's immune system rejects it because it is foreign. Recipients of immunosuppressive medications have an increased risk of infection and cancer because the drugs non-specific immune system inhibition. Longer transplant longevity is promised by new techniques being developed to induce particular tolerance to the graft without dampening other host immune responses. More transplant recipients are put on a lifelong combination immunological medication or steroid therapy to prevent graft rejection. Despite its toxicity and side effects, this medication does not work to stop chronic graft rejection. Additionally, immune suppressive drugs non-specifically weaken the immune system, increasing the risk of infections and cancer in their users. Longer transplant longevity is promised by new techniques being developed to induce particular tolerance to the graft without dampening other host immune responses. To keep improving transplant immunology, immunosuppression will require ongoing critical approaches, review, and customization. Additionally, longer-term immunosuppression-related comorbidities, primarily chronic kidney disease (CKD) and cancer, have increased as a result of improved survival after lung transplantation, necessitating more sophisticated management strategies.

KEYWORDS: Graft, Transplant, Donor, Recipient, Immune system, Hemopoietic system.

INTRODUCTION

Transplantation is the process of moving cells, tissues, or organs, from one site to another, either within the same person or between a donor and a recipient. If an organ system fails, or becomes damaged as a consequence of disease or injury, it can be replaced with a healthy organ or tissue from a donor. Organ transplantation is a major operation and is only offered when all other treatment options have failed. Consequently, it is often a life-saving intervention. In 2015/16, 4,601 patient lives were saved or improved in the UK by an organ transplant. Kidney transplants are the most common organ transplanted on the NHS in the UK (3,265 in 2015/16), followed by the liver (925), and pancreas (230). In addition, a total of 383 combined heart and lung transplants were performed, while in 2015/16.

However, whole organs are not the only type of transplant. The cornea, for example, is the most transplanted single tissue, with 5,734 procedures carried out in 2015/16. Hematopoietic stem cell transplantation (HSCT), often called blood and marrow transplantation (BMT), is another common tissue transplantation procedure. Used to treat a broad spectrum of diseases, though most commonly for blood or bone marrow cancers such as leukemia and lymphoma, around 3,600 HSCT transplants were undertaken in 2012. The immune system plays a critical role in transplantation.

To reduce the possibility of rejection, the donor and recipient are carefully matched for immune compatibility prior to transplantation. However, the small pool of eligible donors can make it difficult to find a donor-recipient match and there will always be a degree of rejection against the graft.

There are various methods for tissue and organ transplantation:

Autograft

The transfer of cells, tissues, or organs from one part of the same person to another. Like a skin transplant.

Allograft

An allograft is when organs or tissues from a donor are transplanted into a non-genetically similar member of the same species. The most typical type of transplant is an allograft.

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RESEARCH ARTICLE

In-silico Studies of Active Phytochemicals from Siddha Medicinal Herbs of Karisalai Chooranam against SARS-CoV-2 main Protease (3CLpro), RNA Dependent RNA Polymerase and Angiotensin-Converting Enzyme II Receptor

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ABSTRACT:

Aim: The contagious disease COVID 19 is a recently out-broken pandemic situation which threatens humankind all over the world. Siddha system of medicine is one of the traditional medical systems of India, which has provided a novel remedy for many epidemics like Dengue, Chicken guinea earlier. On evaluating the literature evidence and considering the mortality and severity of the disease, we have attempted to identify the possible inhibition of viral replication by "Karisalai Chooranam" - a polyherbal Siddha formulation which contains herbs like Karisalai (Wedelia chinensis), Thoodhuvelai (Solanum trilobatum), Musumusukai (Melothria maderaspatana) and Seeragam (Cuminum cyminum). The aim of this study was to identify the bioactive components present in Karisalai chooranam and pin down the components that inhibit COVID 19 protease by In Silico molecular docking analysis. **Material and methods:** The study was performed for the active compounds present in the herbs (Wedelia chinensis - Benzoic acid, *Solanum trilobatum*- Disogenin, *Melothria maderaspatana*- β–sitosterol, *Cuminum cyminum L*- Coumaric acid and Limonene) with three potential targets, PDB id: 6LU7 3-chymotrypsin-like protease (3CLpro), PDB id: 6-NUR RNA dependent RNA polymerase and PDB id: 2AJF Angiotensin-converting enzyme II (ACE2) receptor using Autodock Vina. **Key findings:** The active phytocomponents present in "Karisalai chooranam" was found to inhibit the target 3CL proenzyme and hereby halt the formation of 16 non-structural proteins (nsp1-nsp16) that are highly essential for viral replication and there by prevents viral survival in the host environment. The phytocomponents also inhibited the target RNA dependent RNA polymerase (PDB)-6NUR RdRp which possess versatile action in mediating nonstructural protein (nsp 12) essential for viral replication. A significant binding against the target Angiotensin-converting enzyme II (ACE2) receptors - PDB- 2AJF was found which was recognized as a binding site for novel coronavirus to cause its pathogenesis. Among the five active components present in the herb, the binding ability of Disogenin and β–sitosterol with COVID19 protease suggests a possible mechanism of protease inhibition and thus preventing viral replication. **Significance:** The results strongly suggest that phytocomponents of "Karisalai chooranam" may act as a potential therapeutic agent for the management of COVID-19 and related symptoms. Further, the efficacy of the active compounds should be tested in vitro before being recommended as a drug.

KEYWORDS: COVID-19, Karisalai Chooranam, Siddha Medicine, In silico Molecular docking.

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INTRODUCTION:

The current pandemic novel Coronavirus disease-2019 (COVID-19) is due to Severe Acute Respiratory Syndrome Corona-Virus 2 (SARS-CoV-2)[1]. WHO confirmed it as an infectious pandemic disease in March 2020 which has affected the human population

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THALIDOMIDE- A BANISHED DRUG RETURNS

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ABSTRACT

Thalidomide entered the market as a sedative and used widely all over the world by pregnant women because of its effective action as an anti-emetic in morning sickness. After knowing that thalidomide exhibits teratogenicity in pregnant women its use was reduced at first and gradually banned world widely by its effect on newborn children with abnormalities. After several decades even after knowing the impact of thalidomide, it re-emerged into the market as a novel and highly effective agent in the treatment of various inflammatory and malignant diseases. In the year 2006, its renewal had got a proof to be used in the market that is used to treat plasma cell myeloma. Related drug lenalidomide is used for hematological malignancies. Even though using the drug due to its tragic past it stimulated the FDA to keep an eye on its use worldwide. By reviewing recent clinical trials finally selected medical indications for the drug thalidomide with a focus on haematologic malignancies. It was unclear how thalidomide caused the teratogenic defect in the embryo. But thalidomide regained a second life and used in plasma cell myeloma when the mechanism of action was studied and better understood Research on the mechanism of action of thalidomide is leading to a better understanding of these molecules transits, safe drugs may be designed.

KEYWORDS: Teratogenicity, Antiemetic, Sedative, Anti-tumour, Anti-inflammatory.

INTRODUCTION

Thalidomide is a drug that was developed in the late 1950s. Chemical formula is $C_{13}H_{10}N_2O_4$ The class belongs to "Immune modulatory agents". Since, from the year of development of

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Review article | Nutrients

Role of micronutrients in the management of dengue fever

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ABSTRACT

Dengue virus infection is the most widespread mosquito-borne viral infection in humans and has emerged as a serious global health challenge. In the absence of effective treatment and vaccine, host factors including nutritional status, which may alter disease progression, need investigation. The interplay between nutrition and other infections is well-established, and modulation of nutritional status often presents a simple low-cost method of interrupting transmission, reducing susceptibility, and/or ameliorating disease severity. This review examines the evidence on the role of micronutrients in dengue virus infection. We found critical issues and often inconsistent results across studies; this finding along with the lack of sufficient literature in this field have limited our ability to make any recommendations. However, vitamins D and E have shown promise in small supplementation trials. In summary, the role of micronutrients in dengue virus infection is an exciting research area and needs to be examined in well-designed studies with larger samples. Dengue is life threatening. It is critical to triage patients with dengue infection in the early stage. However, there is limited knowledge on early indicators of Severe dengue. The objective of this study is to identify risk factors for the prognosis of Severe dengue and try to find out some potential predictive factors for Severe dengue from dengue fever in the early of infection.

Keywords: Dengue fever, Hemorrhage, Thrombocytopenia, Vitamin E, Vitamin C

INTRODUCTION

Dengue fever is a viral disease caused by dengue virus that belongs to the genus Flavi virus in the family *Flaviviridae*. The virus is transferred to humans mostly by the bite of female mosquito *Aedes aegypti*. Dengue virus (DENV) is a single-stranded RNA virus with a genetic makeup of about 11,000 nucleotides in length. Dengue fever is caused by IV antigenically related but genetically distinctive viruses (DEN I-IV), and all IV serotypes usually result in mild febrile sickness which probably develops to dengue shock syndrome and dengue hemorrhagic fever (DHF).Dengue virus infection is an illness with a wide clinical picture ranging from asymptomatic to an undifferentiated fever to the more serious form of Thrombocytopenia and plasma leakage are important complications of dengue fever infection, which results to disturbance in thrombopoiesis and increased destruction of platelets in circulation.

Bone marrow has a significant role in the suppression of hematopoietic system and inducing thrombocytopenia occurred during dengue viral infection. TPO (thrombopoietin) is the main regulatory hormone maintaining the adequate count of thrombocytes and megakaryocytes in circulation. A significant increase in TPO level has been found in patients with low circulating levels of megakaryocytes and platelets[1]. Angiotensinogen is a glycoprotein, produced by the liver and released into the circulation. Due to lowered blood pressure, angiotensinogen is acted upon by renin and then converted into angiotensinogen-I which is further converted into angiotensin-II, a physiologically active form of renin angiotensin system and have a vasoconstriction effe regulating the fluid volume and mineral balance in bod fluids. Vitamin D3 plays an important role in mediating th immune system. It increases the phagocytic capacity

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REVIEW ARTICLE

Analytical methods to detect the Adulterants in Milk - An Overview

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ABSTRACT:
Milk contains whole nutrients and is consumed by the majority of population in the form of drinking as well as dietary products. Milk adulteration is one of the most common phenomena, this milk adulteration can be over looked in many countries. it shows serious health hazards leading to fatal diseases. Milk adulterants have been reported globally by adding various instances such as adding water, whey proteins, melamine, urea, detergents, starch hydrogen peroxide, boric acid. This paper presents a detailed review of common milk adulterants as well as different methods such as the chromatographic methods such as HPLC and GC coupled with mass spectrometry to detect the adulterants in milk, and immunological techniques such as ELISA and various DNA based procedures like PCR have also been used to detect the adulterants both qualitatively and quantitatively. This study is organized to be an adulterants-based study instead of a techniques-based one, where qualitative detection for most of the common adulterants are enlisted and quantitative detection methods are limited to a few major adulterants of milk. Apart from regular techniques, recent development in these detection techniques has also been reported. Nowadays milk is being adulterated in more sophisticated ways that demand for cutting-edge research for the detection of adulterants. This review intends to contribute towards the common knowledge base regarding possible milk adulterants and their detection techniques.

KEYWORDS: Milk Processing, Adulteration, Product Safety, ELISA, PCR.

INTRODUCTION:

Milk is a whitish liquid, it is rich in its nutritive value, and it contains carbohydrates, vitamins, minerals, and fats. It is obtained from the mammary glands of female mature animals. Milk obtained from female animals is used for human consumption. The nutritional quality of milk is used for preparing desired food items for humans and young animals too. Milk contains many proteins which may improve the growth of adults and infants.

Adulteration of milk is an act, adulteration in milk is done intentionally for improving the quantity, offering for sale either by admixture, substituting of other substances [or] by withdrawing some ingredients in the milk mostly adulteration in milk is done intentionally to earn more capital by adding of some of the adulterants like water, starch, detergents, gelatin, urea, cane sugar, colostrum, etc. Adulteration can also occur unintentionally by naturally like dust particles and rodent dropping, pesticides, antibiotics, etc. However, the history of milk adulteration is old. Milk adulteration came into global concern after the breakthrough of melamine contamination in Chinese infants' milk products in 2008 (1). Swill milk scandal is a major adulterant it has been reported in 1850s which killed 8000 infants in New York alone (2). Milk is an ideal food for humans and animals because of its high nutritive value, but unfortunately, milk is being

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Research article

Pharmacological evaluation for haematinic activity of *Siddha* formulation *Lavana Dravagam* in rat model

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ABSTRACT

Introduction and Aim: Anaemia is the most common deficiency disorder among people of all age groups, known as Paandu in the Siddha system of medicine. The test drug siddha poly mineral formulation Lavana Dravagam mentioned in Siddha literature kannukamiyam ennum vaithiya segaram, has been used for pandu (anaemia). Dravagam is a form of internal medicine, processed by distillation method and is also referred as Pugai neer, Shakthi neer, Dravaga neer. The study aimed to evaluate the haematinic activity and efficacy of poly mineral Siddha formulation Lavana Dravagam against phenylhydrazine induced anaemic albino Wistar rat model.

Materials and Methods: The animals were selected and divided into four groups (I, II, III, and IV) of six rats (n=6) each. Anaemia was induced by an oral administration of phenylhydrazine (single dose of 10 mg/kg per oral for 8 days). Group I served as normal control and Group II received standard drug hematinic syrup in suspension form at dose 2 mL/kg. Groups III, IV received the formulated oral indiffusible mixture of Lavana Dravagam at a dose of 0.02ml to 0.03ml/kg respectively. RBC, Hb, PCV, MCV, MCH, were analyzed as indices of anaemia. The mean corpuscular volume, mean corpuscular Hb, and mean corpuscular Hb concentration were calculated.

Results: From the literature evidence, acute toxicity evaluation and pharmacological studies, the drug Lavana Dravagam is found out to have hematinic activity. This study reveals that there is significant ($P<0.05$) increase in RBC count, Hb level, and PCV by administering phenylhydrazine within one week of treatment.

Conclusion: It could be concluded that the drug Lavana dravagam will have promising effects in the management of anaemia (Paandu).

Keywords: Distillation; Lavana Dravagam; Siddha formulation; Paandu (anaemia).

INTRODUCTION

Siddha medicine is essentially one of the most ancient types of treatment branch wholly based on biotic medium; natural, herbal (*Thavaram*), inorganic (*Thathu*), and animal products (*Jeevam*) as innovative medicinal resources (1). In the usage of metals, minerals, and other chemicals, this system was far more advanced than other systems. The *Thathu* drugs are categorized into 1. *Uppu* (Salts) (water-soluble inorganic substances or drugs produce vapor when it is exposed to fire), 2. *Pashanam* (Arsenicals) are drugs that should not be dissolved in water but produce the vapor when fired, 3. *Ulogam* (Heavy metals). Among these, *Dravagam* type is one of the internal medicines, which is processed by distillation method. The word *Dravagam* means "that dissolves, liquefies". It is also used in the field of medical alchemy. It is known by various names which include *Pugai Neer*, *Shakthi Neer*, *Dravaga Neer*, etc., This *Dravagam* does not deteriorate with the lapse of time (2).

Anaemia is the most common deficiency, and it is described as decreasing in haemoglobin level and oxygen carrying capacity below the ordinary range. It can be determined by the reduction in hemoglobin level to less than 13 g/dl in men and 12 g/dl in women (3). The rate of maturation of red blood cells entering the blood from the red bone marrow does not keep pace with the rate of haemolysis in anaemia (4). Iron is the major component of haemoglobin, which transports oxygen, and myoglobin in muscles as well as a part of different enzymes involved in cellular functions, respiration, and cell division (5). Low hemoglobin (Hb) levels reduce the oxygen-carrying capacity of blood (6) and other parameters such as total red blood cell (RBC) count, mean corpuscular volume (MCV), packed cell volume (PCV), mean corpuscular hemoglobin (MCH), and MCH concentration (7).

Anaemia is a common nutritional deficiency disorder in the world. WHO defines anaemia is the condition in which the HB content of blood is lower than normal because of a deficiency of one or more essential nutrients (8). WHO has estimated that more than 2 billion people worldwide suffer from anaemia with 50% attributed to iron deficiency (9). 44% of adolescent girls are affected by anaemia in the rural areas in Tamil Nadu. Among these 2.1% are severe

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RESEARCH ARTICLE
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ORALLY DISINTEGRATING FILMS: A NOVEL DRUG DELIVERY STRATEGY

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Abstract

One of its most popular and usual techniques for administering drugs is still oral delivery. Traditional solid dose forms, such as pills and capsules, provide problems, particularly for elderly patients, children, and those who have trouble ingesting. Orally dissolving Film (ODFs) have become a unique and promising medication delivery method to get around these restrictions in recent years. ODFs are a great alternative for individuals whom struggle to consume traditional medications since they are flexible, thin, and quickly dissolving films that may be applied to the mouth or oral cavity with out the need of fluids. This review seeks to give an summary of oral dissolving films, containing information on their composition, production processes, and prospective medicinal uses.ODFs can be produced using methods including lyophilization process hot-melted extrusions, and cast in solvent, all of which are relatively straightforward procedures. These techniques guarantee accurate dosage and reproducible quality, solving significant issues with drug administration. It will also discuss the benefits and challenges of creating ODF, such as stiffness, scale-up production, and taste masking, as well as exactly how continuous technical advancements are addressing these problems. In conclusion but not the least, oral dissolving film are an innovative method of drug delivery which have an opportunity to revolutionise the pharmaceutical industry. Due to their ability to increase patient compliance and their ability to adapt in formulation and production, ODFs are positioned as a viable option for a variety of therapeutic applications.

INTRODUCTION

Despite the significant developments in medication delivery technologies, capsules and tablets are still the most popular dosage forms (Samita Gauri, *et al.*, 2012). However, they are now constrained by a variety of issues, such as elderly and children's concerns about swallowing and swelling (Subash Vijaya Kumar, *et al.*, 2010). The fast dissolving drug delivery system (FDDS) came into existence in late 1970 as an alternative to conventional pills, capsules, and syrups for old and young patients with dysphasia. Fast dissolving tablets are a type of solid dosage form that dissolve quickly and without liquid in the mouth (Arunachalam A, *et al.*, 2010). Due to their friability and brittleness, OFDF can occasionally be challenging to transport, store, and handle

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NANOCRYSTALS: A TOOL FOR ENHANCING DRUG DISSOLUTION

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Abstract
Poor aqueous solubility is a significant challenge in the formulation and delivery of many pharmaceutical compounds, leading to suboptimal bioavailability and therapeutic efficacy. Nanocrystals have emerged as a promising approach to address this issue by enhancing drug dissolution and improving drug delivery systems. This review provides an in-depth analysis of the role of nanocrystals in enhancing drug dissolution and their potential as a tool for improving drug formulations and explaining the principles of nanocrystal technology, including the media milling, preparation method and homogenization method, and the use of stabilizers and surfactants to prevent aggregation. The applications of nanocrystals in different drug delivery systems are explored, including oral, parenteral, and topical routes. In conclusion, nanocrystals represent a powerful tool for enhancing drug dissolution and improving drug delivery systems for poorly water-soluble drugs. Their ability to enhance bioavailability and therapeutic efficacy holds great promise for advancing pharmaceutical development.

Key Words: Nanocrystals, Dissolution, Stabilizers and Bioavailability.

INTRODUCTION

It is believed that 40% or more of active compounds found by combinatorial screening techniques have poor water solubility. Poor solubility is a barrier for screening novel compounds for pharmacological activity at the very beginning, as well as throughout formulation development and clinical testing. This indicates that smart technological formulation techniques are definitely needed to enhance the bioavailability of these inadequately soluble drugs. The term "making such drugs bioavailable" refers to their ability to be administered intravenously or orally with a suitable level of absorption. [1] A number of techniques have been utilized for quite some time to improve drug solubility. These include solubilization by surfactants, complex formation (e.g., cyclodextrin, macromolecules), self-emulsifying drug delivery systems (SEDDS), microemulsions, and, most importantly for oral administration, micronization of drug powders. [2] The term "micronization" refers to the process of reducing drug powders to an average particle size of 1–10m. However, many modern pharmaceuticals are notoriously weakly soluble,

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EFFECTIVENESS OF TOPICAL NANOEMULGEL IN PROMOTING WOUND HEALING

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Abstract

Wound healing is a complex and dynamic process involving various cellular and biochemical events. Over the years, researchers have explored innovative approaches to enhance wound healing and reduce the associated complications. One such promising advancement is the utilization of topical nanoemulgels, a combination of nanoemulsion and hydrogel, for promoting wound healing. This review systematically examines the various formulation components and techniques employed in the preparation of nanoemulgels, emphasizing their role in optimizing drug delivery to the wound site. Special emphasis is placed on the role of surfactants, co-surfactants, and polymers in optimizing the formulation to achieve enhanced stability, drug loading capacity, and sustained release profiles. Furthermore, the physicochemical attributes of nanoemulgels, such as particle size, viscosity, and rheological behavior, are dissected in detail. The impact of these properties on drug release kinetics and skin permeation is expounded. Moreover, this review critically assesses the future perspectives and applications of topical nanoemulgels for wound healing applications. In conclusion, this review provides a comprehensive overview of the formulation and evaluation of topical nanoemulgels for wound healing. The integration of nanotechnology with wound care holds promise for revolutionizing treatment strategies, offering faster healing, reduced scarring, and improved overall patient outcomes. Nanoemulgels provides sustain release activity and may be useful in solving the limitations of conventional drug delivery system. Patient compliance will be more because topical administration of these nanoemulgels is less greasy, transparent and comfortably applied on the skin.

Key Words: Wound healing, Nanotechnology, Hydrogel and Sustained Release

INTRODUCTION

The restoration of normal function and structure following skin damage is facilitated by a dynamic and complicated biological process known as wound healing, which involves the coordinated activity of numerous cellular processes (Enung, S.A. *et al*., 2014). Multiple processes, such as hemostasis, inflammation, proliferation, revascularization, and remodeling, work together to close open wounds and restore normal function. (Landén, N.X. *et al*., 2016). In order for wounds to heal correctly, these stages must occur in concert and at just the right intensity (Reinke, J. *et al*., 2012). Since there aren't

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NANOPHARMACEUTICS: A NOVEL DRUG DELIVERY TECHNOLOGY

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ABSTRACT

Nanopharmaceutics, an evolving branch of nanotechnology, offers a revolutionary and innovative approach to drug delivery systems. Nanopharmaceutics offering promising solutions to the challenges faced by conventional pharmaceutical formulations. This review provides an overview of recent advancements in nanopharmaceutics, focusing on the potential benefits it brings to the field of drug delivery. Nanopharmaceutics employs nanotechnology-based platforms, such as liposomes, micelles, polymeric nanoparticles, and solid lipid nanoparticles, to encapsulate drugs at the nanoscale level. These nanocarriers, often ranging from 1 to 100 nanometers in size, can encapsulate therapeutic agents, including drugs and biological molecules, offering controlled release, improved solubility of poorly water-soluble drugs, improved bioavailability, and targeted delivery to specific tissues or cells. By facilitating site-specific drug delivery, nanopharmaceutics not only enhances therapeutic outcomes but also reduces drug doses, potentially leading to cost savings and improved patient compliance. The reviw also highlights various breakthroughs in nanopharmaceutics, such as novel nanoparticle synthesis methods, surface functionalization techniques, and controlled release strategies. Finally concludes by highlighting the promising prospects of nanopharmaceutics in transforming drug delivery systems. As research continues to advance in this field, nanopharmaceutics holds immense potential to revolutionize the treatment of various diseases, providing safer, more effective, and personalized therapies. This innovative approach has the potential to reshape the landscape of pharmaceutical development and improve patient outcomes across a wide range of medical conditions.

Keywords: Drug Delivery Systems, Liposomes, Polymeric Nanoparticles and Solid Lipid Nanoparticles.

INTRODUCTION

One of the most important technologies of this century is widely acknowledged to be nanotechnology. Science fields as diverse as biology, chemistry, physics, materials science, and engineering all make use of nanotechnology and nanoscience. They include working with and learning about extremely small objects. The capacity to recognize and exert control over specific molecules and atoms is at the heart of nanotechnology and nanoscience. This technology has the potential to make a substantial

ARTIFICIAL INTELLIGENCE AND TELIMEDICINE: AN EFFECTIVE DIGITALIZATION IN HEALTHCARE AND PHARMACEUTICAL SECTORS

S. Venkateswara Rao[1*], K. Sri Purna[1], K. Abinaya Purna[1], K. Padmalatha[2]

Abstract

The convergence of Artificial Intelligence (AI) and Telemedicine has ushered in a transformative era for the pharmaceutical sector. This review delves into the key aspects of this groundbreaking synergy, exploring the integration of AI technologies and telemedicine practices, and its profound impact on the pharmaceutical sector. The utilization of AI and telemedicine has redefined the landscape of patient care, drug development, conduct clinical trials, and overall healthcare management. In drug development, AI driven systems have transformed the traditional research and development process. Advanced AI algorithms analyze vast datasets to find drug targets, forecast interactions, and optimize clinical trials, thereby significantly reducing both the time and cost associated with bringing new pharmaceuticals to market. The digitalization of the pharmaceutical industry through AI and telemedicine has revolutionized the patient-doctor relationship. Telemedicine platforms powered by AI algorithms enable remote consultations, personalized treatment plans, and real-time health monitoring, transcending geographical barriers and improving access to medical expertise. The seamless integration of these technologies has not only enhanced patient engagement but has also expedited diagnostic accuracy, leading to early detection of diseases and improved health outcomes. While the benefits of AI and telemedicine integration in the pharmaceutical sector are extensive, several challenges and ethical considerations must be addressed. Ensuring data privacy, maintaining the security of patient information, and promoting regulatory compliance are critical factors to be carefully managed in this digitized landscape. In conclusion, the symbiosis of AI and telemedicine has revolutionized the pharmaceutical industry, shaping a future where patient-centric care, rapid drug development, and data-driven decision-making are the norm. Embracing this transformation not only promises enhanced healthcare outcomes but also paves the way for a more efficient, accessible, and innovative pharmaceutical sector.

Key Words: Artificial Intelligence (AI), Telemedicine, Drug development, Healthcare and Pharmaceutical sector.

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EMERGING DEVELOPMENTS IN OCULAR DRUG DELIVERY SYSTEMS

S. Venkateswara Rao[1], P. Suma[2], S. Deepthi[3], B. Mounika[4], K. Padmalatha[5]

Abstract

The eye is a particularly safe organ due to its structure and function. A successful treatment for eye illnesses, especially those affecting the retina and optic nerve, has been viewed as an enormous challenge. Scientists have been pushed to develop novel modes of administration such periocular channels due to the limitations of topical and intravitreal routes. Ocular medication delivery systems typically face difficulties with ocular barriers and active drug bioavailability. Microneedle, iontophoresis, dendrimers, and other applications of nanotechnology have showed promise in the treatment of ocular disorders. The development of novel delivery systems would benefit substantially from an improved knowledge of the causes, symptoms, and treatment of ocular illnesses. Future research and development efforts will focus heavily on creating non-invasive sustained medication release for treating both anterior and posterior segment eye problems.

Keywords: Ocular delivery systems, Periocular channels, Intravitreal routes, Novel delivery systems and Nanotechnology.

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RESEARCH ARTICLE

Optimization of Oxiconazole Topical Emulgel Formulation for the Treatment of Skin Infections

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ABSTRACT:

Emulgel is one of the promising topical drug delivery system for the delivery of hydrophobic drugs which overcome a variety of disadvantages of ointments and creams like greasiness as well as phase inversion. The aim of present work was to develop and evaluate Oxiconazole emulgel. Oxiconazole emulgel was prepared by using polymers like Carbopol 934 and HPMC K4M at different concentrations. Oxiconazole is a broad spectrum anti - fungal agent used in treat of various skin infections such as athlete's foot, jock itch and ring worm. The prepared emulgels were evaluated in terms of physical appearance, measurement of pH, viscosity, spreadability, drug content and *in vitro* diffusion studies and skin irritation study. Formulation F1 containing carbapol 934 is considered as optimized formulation because it showed highest drug release i.e., 58.57% in 8 hrs.

KEYWORDS: Topical drug delivery, Emulgel, Oxiconazole, Carbapol 934, HPMC K4M, *In vitro* diffusion studies.

1. INTRODUCTION:

Emulgel are emulsions, either of the water-in-oil or oil-in-water type, which are gelled by mixing with a gelling agent. The emulsion also acts as controlled release drug delivery system in which drug particles entrapped in internal phase go through the external phase to the skin and slowly get absorbed[1,2].

Oxiconazole is used to treat skin infections such as athlete's foot, jock itch and ringworm. Oxiconazole possesses poor water solubility and highly hydrophobic in nature that lies in Biopharmaceutical classification system (BCS)-II class which pose problems in its delivery at the topical region, hence the formulation of Oxiconazole emulgel appeared to be a viable approach.

Literature on topical formulation of Oxiconazole is very less[2,3]. But the marketed products include only the creams and lotions. Hence there is a scope for developing Oxiconazole emulgel formulation.

2. MATERIALS AND METHODS:

Materials:

Oxiconazole Nitrate was obtained as a gift sample from Metrochem API Private Limited, Hyderabad. Light liquid paraffin, Tween 80 and Cetostearyl alcohol were purchased from Sd Fine Chem Limited, Mumbai. Clove oil was purchased from Loba Cheme Pvt. Limited, Mumbai. Span 80 was purchased from Qualikems Fine Chem Pvt. Limited. Methyl paraben, Carbapol 934 and HPMC K4M were purchased from Rolex Chemical Industries, Mumbai. Benzoic acid, Gluteraldehyde, Potassium dihydrogen phosphate and Hydrochloric acid were purchased from Molychem, Mumbai. Ethanol and Methanol were purchased from Merck Company,

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REVIEW ARTICLE

An Overview on Nasal Drug Delivery System

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ABSTRACT:
Nasal drug delivery has got a great deal of attention as a convenient, reliable and potential method for the systemic administration of drugs. It is specially for those molecules which are ineffective orally and only effective if given by injection. The nasal route of drug delivery has advantages over the other alternative systems of non-invasive drug administration. Nasal route is advantageous for the drugs which are unstable on oral administration as they are much degraded in GIT or else metabolized by first pass effect in liver. Nasal route is alternative to parenteral therapy and as well helpful for long term therapy. Nasal mucosa is greatly vascularised as well as mainly permeable giving fast absorption and onset of action. Nasal route is non invasive, extensively used for the local treatment might also be used for systemic therapy as drug directly goes in systemic circulation. Nasal route gives excellent absorption of small molecules, than that of large molecules can be augmented by absorption promoters. The present review presents information pertaining to nasal drug delivery system such as advantages, limitations, anatomy of nose, mechanism of drug absorption, barriers to drug absorption, factors influencing nasal drug absorption, strategies to improve nasal absorption, excipients used in nasal formulations, nasal formulations and their evaluation.

KEYWORDS: Nasal Drug Delivery System, systemic circulation, absorption promoters.

1. INTRODUCTION:

In current time, the nasal drug delivery received a huge deal of attention for its convenient, promising, and reliable way of systemic administration for drugs, especially for those drugs which are ineffective orally and those which must be administered by injections[1]. This route provides a large surface area, porous endothelial membrane, high total blood flow, bypassing the first-pass metabolism, as well as ready accessibility. In addition nasal mucosa is permeable to more compounds than the gastrointestinal tract owing to the absence of pancreatic, gastric enzymatic activities, plus interference by gastrointestinal contents[2].

The early recorded historical application of nasal drug delivery was limited to topical applications of drugs intended for only local effects. However in recent times, its application grown to include a wide range of targeted areas in the body to produce local and systemic effects. Nasal drug delivery too finds a particular place in the traditional system of medicine such as the Ayurvedic system of Indian medicine which is called as "Nasya karma" and is a well-recognized way of treatment[3].

In therapeutics, nose forms an vital part of the body for faster and elevated level of drug absorption with the possibility of self-administration. Drugs range from small micromolecules to large macromolecules such as peptide/proteins, hormones, and vaccines, are delivered through the nasal cavity. It is reported that lipophilic drugs are generally well absorbed from the nasal cavity with pharmacokinetic profiles frequently identical to those obtained subsequent to intravenous injection with a bioavailability approaching up to 100% in numerous

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Original Article

ORODISPERSIBLE TABLET BASED TECHNOLOGY FOR THE TREATMENT OF SCHIZOPHRENIA

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Abstract

Schizophrenia treatment includes long-term pharmacotherapy utilising antipsychotic drugs to stop the current episode and lessen the possibility that symptoms may return. Psychiatric patients, particularly those with schizophrenia, frequently have poor medication adherence, which can have negative long-term effects and ultimately lead to treatment failure. A new contributing reason to medication noncompliance is having trouble swallowing traditional tablets and capsules, which has prompted the development of alternate drug delivery methods including orodispersible tablets (ODTs). Compared to conventional tablet formulations, ODTs are linked to enhanced drug compliance. Orally disintegrating tablets (ODTs) are solid unit dose forms that look like regular tablets but contain super disintegrants that speed up how quickly they dissolve and/or scatter in the mouth. This method increased pregastric absorption, which increased bioavailability by reducing first pass hepatic metabolism, lowered dose, quick onset of action, and enhanced clinical performance by minimising side effects. It has also been used to give medications to patients who cannot swallow, such as children, the elderly, and people with mental health issues, in an effort to increase patient compliance for the administration of medications to these patients. This review provides a brief summary of the need for orodispersible drug delivery for the treatment of schizophrenia, its advantages and disadvantages, the challenges of developing dosage forms, the ingredients used to make orodispersible tablets, the processes used to make them, evaluation techniques, and commercially available ODTs.

Keywords: Schizophrenia, Orodispersible tablets, Super disintegrants, Techniques, Excipients and Evaluation.

INTRODUCTION:

Orally given medicine distribution is still regarded as the gold standard in the pharmaceutical industry and is still thought to be the safest, most beneficial, and least expensive way of administration, providing the best route for patient compliance [1]. However, low compliance, particularly in geriatrics, is caused by the widespread issue of tablets and capsules being difficult to swallow [2].

Design of new dosage forms has taken on a lot of significance as a means of enhancing compliance and making administration more convenient. The rapid and complete release of a medicine provided by traditional oral drug delivery may occur as such without having the desired effect. Due to the presence of food, the stomach's pH, enzymatic degradation, variations in GIT motility, and other factors, the medication may not have had enough time to be absorbed [3, 4]. Recently, there has been a lot of focus on designing drug delivery systems for paediatrics and geriatrics with organoleptic elegance and maximum patient acceptability [5-7]. The oral route is recommended for drug delivery because it is easy to use, offers economical therapy, encourages self-medication, and is a noninvasive way that increases patient compliance. A lot of new research is being done in this area [8].

Oral Dispersible Tablets:

When delivering drugs orally, such as with tablets and capsules, drinking water is mostly important because some patients find it difficult to swallow the big usual dosage forms [9]. Orodispersible tablets disintegrate in the mouth without the need for water, minimising dysphagia and increasing patient compliance when used in place of oral medication administration techniques. They are therefore helpful in situations where water is unavailable or forbidden, such as before surgery, during kinetosis, cough bouts brought on by neurological stimulation, or during chest infections. Orodispersible tablets are made using a variety of techniques to ensure that the dose form dissolves fast in the presence of saliva and leaves a pleasant mouth feel [10]. Patients who have trouble swallowing can be given these orodispersible tablets (ODT). They are also known as melt-in-your-mouth, rapid-melting, mouth-dissolvable, or porous tablets [11].

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REVIEW ARTICLE

A Review on Colon Targeted Drug Delivery System

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ABSTRACT:
Colon-specific drug delivery systems (CDDS) are advantageous for the treatment of a range of local diseases such as ulcerative colitis, Crohn's disease, irritable bowel syndrome, chronic pancreatitis, and colonic cancer. Colon targeted drug delivery system can be utilized to deliver protein and peptide drugs as they that are known to degrade in the extreme gastric pH. These approaches involve the use of formulation components that interact with one or more aspects of gastrointestinal (GI) physiology, such as the variation in the pH along the GI tract, the occurrence of colonic microflora, and enzymes, to attain colon targeting. This article highlights the advantages, limitations and factors influencing colon-specific drug delivery. Further, the review gives information of various conventional, as well as relatively newer formulation approaches presently being utilized for the improvement of CDDS.

KEYWORDS: Colon Targeted Drug Delivery System.

1. INTRODUCTION:

Colon targeted drug delivery has been the centre of numerous studies in recent years due to its potential to improve treatment of local diseases affecting the colon, while minimizing systemic side effects. Some examples of disease states which impact the colon include Crohn's disease (CD), ulcerative colitis (UC), and irritable bowel syndrome (IBS). Drugs such as dexamethasone, hydrocortisone, sulfasalazine, metronidazole and prednisolone are used for the treatment of these ailments. The delivery of these drugs specifically to the colon without being absorbed first in the upper gastrointestinal (GI) tract allows for a elevated concentration of the drug to arrive at the colon with minimal systemic absorption[1].

The colonic contents have a longer retention time (up to 5 days), and the colonic mucosa is known to facilitate the absorption of several drugs, making this organ an ideal site for drug delivery.

A drug can be delivered to the colon via the oral, or the rectal route. Oral dosage forms are the most favoured delivery route for colon-specific delivery due to their convenience. Rectal administration presents the shortest route for targeting drugs to the colon[2]. Yet, reaching the proximal part of colon via rectal administration is difficult. Rectal administration can also be uncomfortable for patients and compliance may be less than optimal[3]. Drug preparation for intrarectal administration is supplied as solutions, foam, and suppositories. The intrarectal route is used both as a means of systemic dosing and for the delivery of topically active drug to the large intestine. Corticosteroids such as hydrocortisone and prednisolone are administered via the rectum for the treatment of ulcerative colitis. Even though these drugs are absorbed from the large bowel, it is normally believed that their

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REVIEW ARTICLE

A Review on Osmotic Drug Delivery System

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ABSTRACT:
Conventional drug delivery systems have slight control over their drug release and nearly uncontrollable over the effective concentration at the target site. This type of dosing pattern might effect on constantly changing, unpredictable plasma concentrations. Drugs can be delivered in a controlled design over a prolonged period of time by the controlled or modified release drug delivery systems. For most of the drugs, oral route is the most tolerable route of administration. Certain molecules may have low oral bioavailability because of solubility or permeability limitations. Evolution of an extended-release dosage form also need sensible absorption throughout the gastro-intestinal tract (GIT). Among the existing techniques to improve the bioavailability of these drugs fabrication of osmotic drug delivery system is the most suitable one. Osmotic drug delivery systems release the drug with the zero-order kinetics at a constant rate. This review brings out advantages, disadvantages, principles, basic components and classification of osmotic drug delivery systems.

KEYWORDS: Novel drug delivery system, Osmosis, Osmotic drug delivery system, Osmotic pressure, osmotic pump, Zero order kinetics.

1. INTRODUCTION:

In current years, considerable awareness has been focused on the development of novel drug delivery system (NDDS) osmotically controlled drug delivery system (ODDS) are the type of NDDS which make use of osmotic pressure for controlled delivery of active agent. The release of drug from osmotic system is independent of gastric pH and gastric motility. However, drug release from oral controlled release dosage forms may be affected by pH, GI motility and presence of food in the GI tract. Osmotically controlled drug delivery system (OCDDS) is one of the most favourable drug delivery technologies that use osmotic pressure as a driving force for controlled delivery of active agents.

Drug release from OCDDS is independent of pH and hydrodynamic conditions of the body because of the semi permeable nature of the rate-controlling membrane and the design of deliver orifice used in osmotic systems, so a potency of *In vitro/ In vivo* correlation is achieved. Osmosis refers to process of movement of solvent from lower concentration of solute towards higher concentration of solute across a semipermeable membrane. Osmotic pressure is least pressure which needs to be applied to a solution to prevent the inside flow of its pure solvent across a semipermeable membrane. Osmotic Pump Controlled Release Preparation is a novel drug delivery system with inner drug deliver rate as characteristic and controlled with the osmotic pressure difference between inside and outside of the semipermeable membrane as drug delivery capacity[1,2].

Now a days, osmotic tablets have been expanded in which the delivery orifice is formed by the incorporation of a leachable component in the coating. Once the tablet

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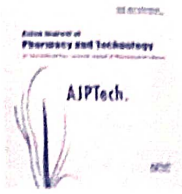

RESEARCH ARTICLE

Development of Fast Dissolving Tablets of Losartan Potassium using Novel Co-processed Superdisintegrants

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ABSTRACT:

Losartan is used to treat high blood pressure (hypertension) and also used to lower the risk of stroke in certain people with heart disease. Therefore, the purpose of this study is to formulate mouth dissolving tablet of losartan potassium to improve its bioavailability, to attain fast onset of action and rise patient compliance. Owing to short bioavailability of 33% and to increase onset of action, fast dissolving tablets of Losartan Potassium were formulated using coprocessed superdisintegrants in order to improve the dissolution rate, in that way the bioavailability. The effect of concentration of the Croscarmellose sodium was studied by a set of three formulations (F1, F2, F3) with concentrations of 2%, 4% and 8% w/w respectively. Similarly, the impact of Sodium Starch Glycolate was studied by a set of three formulations (F4, F5 and F6) respectively. The formulation prepared with 8% w/w of superdisintegrant showed relatively rapid release of Losartan potassium when compared with other concentrations of Croscarmellose sodium and Sodium Starch Glycolate. The formulation prepared with Croscarmellose sodium had showed relatively fast release of Losartan Potassium when compared with Sodium Starch Glycolate. Three formulations (F7, F8 and F9) were prepared by including a combination of superdisintegrants (Co-processed Mixtures), Croscarmellose sodium and Sodium Starch Glycolate by direct compression method. Formulation containing Co-processed mixtures had less disintegration time as compared to the individual superdisintegrants. Subsequently, we can conclude that nature, concentration of the superdisintegrant in addition to combination of superdisintegrants (Co-processed) showed influence on the rate of dissolution.

KEYWORDS: Losartan potassium, Co-processed Mixtures, Fast dissolving tablets.

1. INTRODUCTION:

The most common and favoured route of drug administration is through the oral route. Fast dissolving tablets are gaining position among novel oral drug-delivery system as they have improved patient compliance and have some added advantages compared to other oral formulations.

They are solid unit dosage forms, which disintegrate in the mouth within a minute in the presence of saliva due to super disintegrants in the formulation[1,2]. It provides numerous advantages with respect to its stability, administration without water, accurate dosing, easy manufacturing, small packaging size, and handling. Its ease of administration in the population especially for paediatrics, geriatrics or any mentally retarded persons makes it a very widespread dosage form. Because of the presence of super disintegrants, it gets dissolved rapidly, ensuing rapid absorption of drug which in turn provides rapid onset of action. As the absorption is taking place

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REVIEW ARTICLE

A Review on Emulgels as a Novel Approach for Topical Drug Delivery

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ABSTRACT:
Topical drug delivery has been used for centuries for the treatment of local skin disorders. Drugs applied to the skin for their local action include antiseptics, antifungal agents, skin emollients, and protectants. Major disadvantage of gel is the delivery of hydrophobic drug. This can be overcome by emulgels. Emulgels have emerged as one of the most attractive topical delivery system as it has dual release control system i.e. gel and emulsion. Since hydrophobic drugs are not soluble in gel bases, it causes problem during the release of drug. When gel and emulsion are used in combination the dosage form is referred as emulgel. In emulgel formulation, the hydrophobic drugs could be incorporated into the oil phase and then oily globules are dispersed in aqueous phase resulting in o/w emulsion which can be mixed into the gel base. The major aim behind this formulation is delivery of hydrophobic drugs to systemic circulation via skin. A distinctive feature of topical drug delivery is the straight accessibility of the skin as a target organ for the treatment. This might be proving improved stability and release of drug than just incorporating drugs into gel base. The purpose of this review article is to exemplify emulgel for topical drug delivery, advantages and disadvantages of emulgel, physiology of skin, major components of emulgel, method of preparation, characterization and marketed products of emulgel.

KEYWORDS: Emulgel, Gel, Topical drug delivery, Skin disorders.

1. INTRODUCTION:

Drugs can be administered by numerous routes to human body namely oral, sublingual, rectal, parental etc. When drug administration through other routes fails or skin infections occur, transdermal delivery system could be employed. Large numbers of dermal products are existing for skin as liquids, powders etc. however the most accepted products are semisolid preparation. Among the semisolid preparations, the transparent gels are utilized both in cosmetics and in pharmaceutical preparations. Gels were prepared by entrapment of large amounts of aqueous or hydroalcoholic liquid in a network of colloidal solid particles. Gel formulations normally demonstrate improved drug release than ointments and creams.

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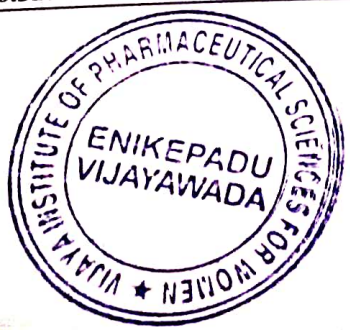
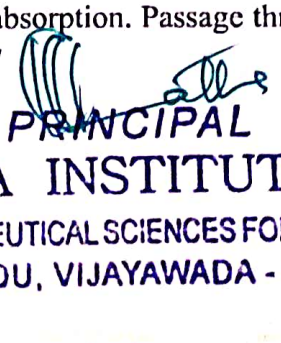
A main drawback is in the release of hydrophobic drugs. Such types of troubles were overcome by emulgel preparations. When gels and emulsion were mixed jointly emulgel is formed. Water phase containing gelling agent would convert an emulsion into an emulgel. Oil in water system was utilized for encapsulating lipophilic drugs whereas water in oil system was utilized for hydrophilic drug. Emulgels could be washed away without difficulty whenever needed and as well shows elegant properties. It in addition illustrates good penetration through the skin[1]. Emulgels with properties such as being thixotropic, greaseless, easily spreadable, easily removable, emollient, non-staining, water soluble, longer shelf life, biofriendly, transparent and pleasing appearance were used for dermatological purposes. Drug molecules can penetrate into the skin by three routes: through intact stratum corneum, through sweat ducts, or through sebaceous follicle. The surface of the stratum corneum presents more than 99% of the total skin surface accessible for percutaneous drug absorption. Passage through this outermost layer was the





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REVIEW ARTICLE

Fast Dissolving Tablets: A Review

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ABSTRACT:
In the pharmaceutical Industry oral route is considered as the safest and convenient route. Fast dissolving tablets (FDTs) are solid dosage forms containing drugs that disintegrate in the oral cavity within less than 1 minute leaving an easy to swallow residue. These dosage forms include superdisintegrants which impart quick disintegration with existence of saliva and can be swallowed without difficulty. Fast dissolving tablets are the very good preference for the paediatric as well as geriatric patients. To improve the bioavailability of many drugs, fast dissolving drug delivery systems are used widely. Sophisticated technologies used for manufacturing fast dissolving tablets are by direct compression method, freeze drying method, sublimation method, mass extrusion and cotton candy process. Taste is the vital factor since these tablets disintegrate directly in the mouth. FDTs are evaluated by various parameters such as hardness test, friability test, water absorption ratio, wetting time, disintegration test and dissolution test. These tablets are also well-known as mouth dissolving tablets and orodispersible tablets. This review article will emphasize on ideal properties, challenges, advantages, disadvantages, conventional techniques, patented technologies and evaluation of orodispersible tablets.

KEYWORDS: Sophisticated technologies, Superdisintegrants.

1. INTRODUCTION:

Medicinal and other curative agents which produces the systemic effect that can be taken by several routes of administration, but oral route is considered to be more effective route and possess high degree of patient compliance[1]. Dissolution of drug, absorption of drug, onset of clinical effect of drug and bioavailability of drug is significantly higher in orally disintegrating tablets when compared to conventional dosage form. Basic approach used in developing orodispersible tablets (ODTs) is by increasing the porosity of tablet by using high water soluble excipients in the formulation and by incorporating the appropriate disintegrating agents.

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These dosage forms rapidly dissolve in mouth when they immediately come into contact with saliva and releases the drug. Orodispersible tablets are also known as Fast dissolving tablets[2].

There is even no need of water during administration of drug which will be highly useful for paediatric and geriatric patients. Orodispersible tablets are the tablets which is not coated and when kept in the mouth disperses rapidly before swallowing[3]. Orodispersible tablets are also known as "Melt in mouth tablets", "Mouth dissolving tablets", "Rapimelt tablets", "Porous tablets", "Quick dissolving tablets" and "Fast dissolving drug delivery". Recently the term ODT is approved by US Pharmacopoeia, (CDER) Centre for Drug Evaluation and Research and British Pharmacopoeia. According to US FDA, ODT is a solid dosage form which contains drug substances that rapidly disintegrates when placed upon tongue usually disintegrates within a matter of

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REVIEW ARTICLE

Hydrotropy: A Promising Tool for Solubility Enhancement

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ABSTRACT:
Solubility is one of the key parameters to attain desired concentration of drug in systemic circulation to show pharmacological response. Various methods are engaged to augment the aqueous solubility of poorly water-soluble drugs and hydrotropic solubilisation is one of them. Hydrotropy is defined as a solubilization process whereby addition of a large amount of second solutes results in an increase in the aqueous solubility of another solute and chemicals which are used in the hydrotropy are called hydrotropes like sodium benzoate, sodium citrate, urea, niacinamide etc. Based on advantages like the high selectivity, independent of pH and cheap, easy availability makes this technique more prevailing than other solubilisation methods. Mixed hydrotropy is a solubilisation technique to augment the water solubility of poorly water soluble drugs by the way of different ratio of blends of hydrotropic agents which gives synergistic augmentation effect. The purpose of this review article is to illustrate the need for solubility, hydrotropic solubilisation, mechanism of action of hydrotrope, classification of hydrotropes, advantages and mixed hydrotropic technique of solubilisation for improving the solubility which in turn helps to attain absorption and improved bioavailability.

KEYWORDS: Hydrotropy, Hydrotropes, solubility, Mixed hydrotropy, Solubilisation.

1. INTRODUCTION:

The present major problem in the pharmaceutical industry was related to strategies that enhance the aqueous solubility of drugs, as nearly 40% of the recently discovered drug candidates experience from poor aqueous solubility. Solubility is one of the key characters to achieve required pharmacological response. Therapeutic effectiveness of a drug relies upon the bioavailability and eventually was attributed to solubility of drug moiety[1]. Currently, various formulation technologies were existing to augment solubility and dissolution profile to boost oral bioavailability. In addition to these technologies, 'hydrotropy' was one of the familiar methods accessible for resolving solubility problems[2].

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1.1 Need of solubility:

About 40% of novel chemical entities upcoming from discovery were inadequately bioavailable. Poor bioavailability applies strong limits to the performance of a drug by the requirement to administer a much upper dose than strictly required from a pharmacologic viewpoint[3]. This could provoke important side effects otherwise generate troubles related to the cost of treatment. Poor bioavailability might as well obligate the formulator to opt the injection route rather than the oral route. For superior oral bioavailability drug should be soluble in gastro-intestinal fluids i.e., aqueous soluble as well as possess permeability properties for good membrane diffusion in turn to arrive at the bloodstream [4]. The crucial plan of the further formulation and development section was to formulate that drug obtainable at appropriate site of action within optimum dose[5]. Hydrotropic agents had been found to be efficient to augment aqueous solubility of numerous hydrophobic drugs and thus can play important role in getting

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REVIEW ARTICLE

A Review on Transdermal Drug Delivery System

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ABSTRACT:
Nowadays about 74% of drugs are taken orally and are found not to be as effective as required. To improve such characters transdermal drug delivery system was emerged. Drug delivery through the skin to attain a systemic effect of a drug is commonly known as transdermal drug delivery and differs from traditional topical drug delivery. Transdermal drug delivery systems (TDDS) are dosage forms involves drug transport to viable epidermal and or dermal tissues of the skin for local therapeutic effect while a very major fraction of drug is transported into the systemic blood circulation. The adhesive of the transdermal drug delivery system is critical to the safety, efficacy and quality of the product. Topical administration of therapeutic agents offers many advantages over conventional oral and invasive methods of drug delivery. Several important advantages of transdermal drug delivery are limitation of hepatic first pass metabolism, enhancement of therapeutic efficiency and maintenance of steady plasma level of the drug. This review article provides an overview of advantages and disadvantages, factors affecting transdermal drug delivery, components and types of transdermal drug delivery, methods of preparation and methods of evaluation.

KEYWORDS: TDDS, Topical drug delivery, Systemic blood circulation, Skin.

1. INTRODUCTION:

Oral route is the popular route of drug delivery. Although it has some disadvantages including first pass metabolism, drug degradation in gastrointestinal tract due to enzymes, pH etc. To cross these problems, a novel drug delivery system was developed. In this transdermal delivery system medicated adhesive patches are prepared which deliver therapeutically effective amount of drug across the skin when it placed on skin. Medicated adhesive patches or transdermal patches are of different sizes, having more than one ingredient. Once they apply on unbroken skin they deliver active ingredients into systemic circulation passing via skin barriers.

A patch containing high dose of drug inside which is retained on the skin for prolonged period of time, which get enters into blood flow via diffusion process. Drug can penetrate through skin via three pathways-through hair follicals, through circulation passing via skin barriers. A patch containing high dose of drug inside which is retained on the skin for prolonged period of time, which get enters into blood flow via diffusion process. Drug can penetrate through skin via three pathways-through hair follicals, through sebaceous glands, through sweat duct. Transdermal drug delivery systems are used in various skin disorders, also in the management of angina pectoris, pains, smoking cessation and neurological disorders such as Parkinson's disease[1].

1.1 Advantages of transdermal drug delivery system:

1. First pass metabolisms of drug get avoided.
2. Gastrointestinal incompatibilities get avoided.

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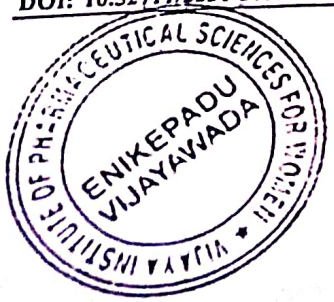

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IJPRNS

FORMULATION AND EVALUATION OF CONTROLLED DRUG RELEASE TABLET OF ATENOLOL

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ABSTRACT

The role of chronotherapeutics in hypertension and anti-inflammatory management is based on the recognition that blood pressure and pain does not remain constant throughout the day. Instead, it tends to be higher in the early morning hours and lower in the evening hours. The aim of the present study was to design time controlled tablet of Atenolol, as chronopharmaceuticaldrug delivery system by compression coating. Formulation design involves coating polymers HPMC K05:EC (ratio - 1:1,1:2,2:1 w/w) and HPMC K05:CA (ratio - 1:1,1:2,2:1 w/w)were exploited for their pulsatile drug release ability. The basic idea behind the dosage form development is to investigate effect of coating design on lag time and drug release from press-coated pulsatile release tablet. Coating materials were evaluated for pre-compression parameters like bulk density, tapped density, Angle of repose, compressibility index, Hausner's ratio and also evaluated the tablet for hardness, thickness, friability, weight variation, swelling index, drug content, In vitro drug release, drug excipient compatability studies. The Formulation was optimized on basis of acceptable tablet properties and in vitro drug release. The results indicate that formulation F9, F14 for Atenolol press-coated tablets achieve a burst release after 7.45 & 8hrs lag time which is applicable pulsatile drug delivery for hypertension.

Key Words: Atenolol, HPMC K05, pulsatile release tablet.

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INTRODUCTION

Pulsatile drug delivery systems (PDDS) (or) Cracking delivery systems (CDDS) can be classified in site fic and time controlled systems.Drug release site specific systems depends on the onment in the GIT. Eg:-on pH, presence of mes, and the pressure in the GIT.Time controlled ile delivery has been achieved mainly with drug ining cores, which are covered with release Controlling layers.The cores serves as a reservoir, which protects the core from environment, eg:- water, acidic pH and enzymes, until the drug is released after the lag phase.The coatings can erode/ dissolve, rupture (or) alter their permeability at the required time.The potential benefits of chronotherapeutics have been demonstrated in the management of a number o diseases. In particular there is a great deal of interes in how chronotherapy can particularly benefit patient suffering from allergic rhinitis, rheumatoid arthriti and related disorders, asthma, cancer, cardiovascula diseases, and peptic ulcer disease.Circadian rhythm o the body is an important concept for understanding th optimum need of drug in the body. There is a consta need for new drug delivery systems that can provi

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IJPRNS

FORMULATION AND EVALUATION OF MODIFIED PULSATILE DRUG DELIVERY SYSTEM FOR TELMISARTAN

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ABSTRACT

Telmisartan is an Angiotensin II receptor antagonist used in the treatment of hypertension. According to the Biopharmaceutical Classification System, Telmisartan belongs class II drug; high permeability low solubility. It is practically insoluble in water and it shows low dissolution profile and poor absorption. The objective of the present study was to design and evaluate modified pulsatile drug delivery system of marketed product of Telmisartan according to circadian rhythm using natural polymers like xanthan gum, sodium alginate, guar gum, sodium CMC for compressed coated through direct compression method and marketed product of telmisartanas inner core tablet through direct compression method to achieve a predetermined lag time(8hrs) for chronotherapy of hypertension.. Ethylcellulose:HPMC 70mg:130mg(F12), HPMC:Celluloseacetate 130mg:70mg (F15) Xanthan gum: Sodium alginate 75mg: 125mg (F_{20}) and 85mg: 115mg (F21)showed predetermined lag time of 8 hrs so these are selected as optimized formulations and they has shown the immediate release of the drug after the lag time of about 8 hrs. Optimized formulation was evaluated for weight variation, hardness, disintegration time and Invitro dissolution studies, drug – excipient interaction studies.

Key Words: Pulsatile drug delivery system, Telmisartan, marketed product, inner core tablet, xanthan gum, sodium alginate, 8hrs.evaluation, hypertension.

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NTRODUCTION

ompression coating can involve direct compression both the core and the coat obviating needs for parate coating process and use of coating solutions. e outer tablet of the compression-coated tablet vides the initial dose, rapidly disintegrating in the mach and the inner layer is formulated with mponents that are insoluble in gastric media but are ased in the intestinal environment. Materials such as hydrophilic cellulose derivates can be used. Compression is easy on laboratory scale. The major drawbacks of the technique are that relatively large amounts of coating materials are needed and it is difficult to position the cores correctly.Press coating also referred to as double compression coating compression coating (or) dry coating is an old technique first proposed by "Noyes" in an 189 patent.The technique requires a specific tablet pres with compression coating capability.The press coatin technique offers many advantages, such as protectio of hygroscopic, light sensitive, oxygen liable and aci liable drugs, isolation of incompatible drugs fro each other, and provides a method for both sustaine drug release and modification of the drug releas profile.In general, a press coated tablet consists of a

Dept. of Pharmaceutical Analysis

Scientific Publications

2022-23

Review Article

Thai Journal of Pharmaceutical Sciences

Silymarin and Oral Cancer: A Review on Clinical and Analytical Reports

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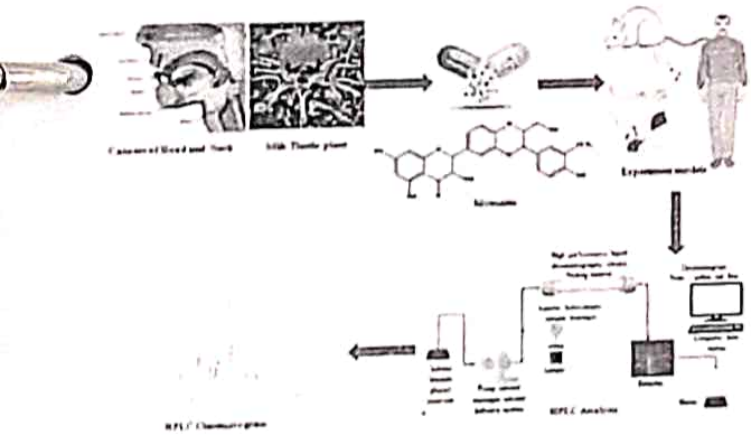
ABSTRACT

Oral cancer is the sixth-largest kind globally of cancer and a major health issue in India as well and affects a large population that is very vulnerable to recurrences and a lower survival rate among all the other malignancies. Milk thistle is a phytochemical herb of interest that has been used as folk medicine since ancient times. Due to its potential benefits, the pharmaceutical industrial world is widely using silymarin (an active component of milk thistle) for commercial preparations. Knowing the quantity and identity of active components is of utmost importance. Therefore, robust, accurate, and precise analytical methods are needed to identify and quantify the active constituents of plants. This review comprises several studies of silymarin on oral cancer as well as critical information on liquid chromatographic techniques developed and used in pharmaceuticals and biological matrices for the assessment of silymarin/silybin. The critical chromatographic conditions such as column used, mobile phase composition, detection wavelength, flow rate, linearity, and retention time are discussed in this article. Furthermore, emphasized the gap in clinical and analytical perspectives to enable researchers to explore more on these thrust areas.

Keywords: Bioanalysis, Clinical, High-performance liquid chromatography, Liquid chromatography–mass spectrometry/mass spectrometry, Oral squamous cell carcinoma, Silymarin/Silybin

Graphical Abstract



INTRODUCTION

Cancer is a well-known threat and a risk to the world. Unregulated cell growth that invades and induces the impairment of neighboring tissue is known as cancer. When the [illegible] in the mouthparts, it is considered oral cancer. [illegible] of malignant neoplasm in the oral cavity is accounted for squamous cell carcinoma. Most recent statistics in India have reported the lowest prevalence of oral cancer in Kerala and the largest in West Bengal. It is well-known fact that constant intakes of tobacco in any of the forms such as zarda, mawa, kharra, khaini, cigars, beedi, and hookah are believed to be the major etiological factor for developing oral cancer. Besides, betel quid and areca nut chewing, poor oral health hygiene acquired viral infections such as human papillomavirus; unhealthy addictive habits such as smoking and prolonged alcohol consumption are the key stimuli of oral cancer. Lack of awareness among the people on the causes and fatalities of oral cancer also plays a major role.[1,2] The malignant tumor initiation site differs among different regions and countries. However, most of the studies revealed the tongue as the first facet of all that is compromised by oral cancer. Lesions in the floor of the mouth, gingival, buccal mucosa, palate, lip, and alveolar mucosa are characteristics of oral cancer. The most typical clinical appearance is an ulcerated lesion surrounded by high rolling borders, with a necrotic center region.[3,4] Surgeries, radiation, chemotherapy, a combination of radiochemotherapy regimens, targeted drugs, and immunotherapy are the conventional therapeutic modalities in current practice to provide effective treatment promptly. However, a patient's age, gender, and lifestyle play a key role in selecting an appropriate

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Original Article

Analytical Characterization of USFDA Drug Lorcaserin Recently Banned – Scope for Its Existence in the Pharma Industry

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Abstract

Lorcaserin is an anti-obesity agent used to treat chronic obesity. It is a selective 5-HT receptor agonist. Lorcaserin tablet formulation is not marketed in India but was available in the US and the patent expiration happens to be in 2023, there is greater scope for the launch of generic drugs in India as well as other countries. The literature review reveals that there are several clinical data for the estimation of Lorcaserin was reported so far but there are few Analytical reports available. Therefore, the attempt at method development and validation of Lorcaserin raw material was undertaken by various analytical methodologies such as Titrimetry, UV, and HPLC methods. But Lorcaserin tablet (Belviq) was withdrawn from US Market on Feb 13, 2020, due to cancer risk. In this view, the synthetic mixtures were prepared and evaluated by the proposed HPLC Method. The developed titrimetry, UV, and HPLC methods are easy to perform and specific to Lorcaserin and pay a wider way to the characterization of newer drug substances and formulations.

Keywords: Lorcaserin; Characterization; Titrimetry; UV; HPLC; Synthetic mixtures.

1. Introduction

Lorcaserin is an antiobesity drug used to treat chronic weight management. It suppresses appetite and food intake. It is a selective 5-Hydroxy Tryptamine receptor agonist. Induction of 5-HT receptors stimulates the release of 2-melanocortin stimulating hormone that acts on melanocortin 4-receptors to control appetite [1].

Lorcaserin's chemical name is R-8-chloro-1-methyl-2,3,4,5-tetrahydro-1H-3-benzazepine hydrochloride hemihydrate. The empirical formula is C11H15Cl2N.0.5H2O and the molecular weight of the hemihydrate form is 241.16 g/mol (**Figure 1**) [2].

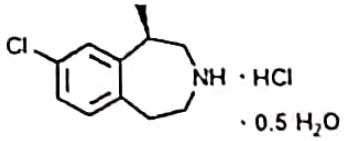

Figure 1. Structure of Lorcaserin

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Potential of Phytoconstituents as antiulcer agents

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Author's contribution

Harshitha HNSK Tavva: Gathered articles
Vani Mamillapalli: Manuscript write up
Vinuthna Rallapalli: Gathered articles
Zyba Mohammed: Gathered articles
Dharani Motukuru: Gathered articles
Padmalatha Kantamaneni : Correction of article

ABSTRACT

In addition to offering a wide variety of pharmaceuticals, nature may also have the solutions to any medical problems. There are still many clinically useful medicines found in nature. Ulcer diseases are a significant and expanding category of health problems. Today, a variety of drugs are used to treat peptic ulcers, but all of them have drawbacks, such as the potential for relapse and drug combinations. Peptic ulcers are a condition that is increasingly being treated with plant-based medications. Pure phytochemicals are difficult to get as ulcer treatments. Both time and money are invested in it. *Mangifera indica, Azadirachta indica, Ocimum sanctum, Annona squamosa, Mimosa pudica, Terminalia chebula, Ficus religiosa, Carica papaya, Aegle marmelos, Moringa oleifera, Psidium guajava,* and other plants are some of the plants that act as antiulcer herbals and are ignored for their beneficial function. Flavonoids can help to decrease free radicals to some extent in combating ulcers. Numerous isolated compounds have significant anti-ulcer activity, such as mangiferin, nimbidin, eugenol, tannic acid, mimosine, gallic acid, chebulinic acid, naringenin, papain, and others. The results of this review paper suggest that the anti-ulcer effect is mediated by a number of medicinal plants and their chemical components. This drives us towards development of novel phytoconstituents with structural modification to act as better antiulcer drug molecules at clinical level.

Keywords: Anti-Ulcer, Peptic Ulcer, Phyto constituents, Structural Modification

Introduction

An open sore on the skin or mucous membrane known as an ulcer is characterized by the expulsion of inflammatory dead tissue (Chan *et al,* 2000). Ulcers can appear almost everywhere, however they most usually affect the lower extremities and the digestive tract. Peptic ulcers are one of many different types of ulcers, which can occur in the vagina, esophagus, or stomach. An erosion of the

ANAESTHESIA MANIFESTATIONS OF HYPERTENSION

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ABSTRACT

Hypertension is one of the major mortality factors across the world according to recent statistical surveys. It plays a major role in maintaining the stability of the patient during the intraoperative period and in the management of anaesthesia. The complications caused during surgery and during induction of anaesthesia will be completely controlled by the anaesthesia team by using medications such as diuretics, beta blockers, ACE inhibitors. The article manifests the considerations of hypertension in anaesthesia. A clinical survey had been conducted involving 40 patients in two different age groups of 20-40 years and 50-80 years. The study involves the use of two drugs labetalol and carvedilol. The results of the study indicated that the used anti-hypertensive drugs reduced complications and manifestations in the selected age group people. Further studies such as genetic inheritance, and involved biochemical factors may be investigated.

Keywords: Hypertension, Anaesthetic Period, Labetalol, Carvedilol.

INTRODUCTION

Hypertension (hyper=over/beyond; tension=stressed) is also called SILENT KILLER. It can be defined as a condition in which the high amount of pressure of blood flow builds up against the walls of arteries. Patients above 65 yrs age group; persons having family history of hypertension; obese patients and high intake of sodium through diet are the major risk factors for hypertension. Chronic conditions such as kidney and hormonal problems; high cholesterol and RBS levels are the major causes of hypertension. Based on the type of hypertension there will be various medications for treatment[1][2].

TYPES:

Major hypertension is divided into 2. types: 1. SYSTEMIC HYPERTENSION 2. PULMONARY HYPERTENSION. The increase in systemic arterial blood pressure is called Systemic hypertension, also called SAH. It is usually characterised by nocturnal decrease in blood pressure. It is of 2.types: PRIMARY and SECONDARY. Pressure in blood vessels leading from heart to lungs is too high, is defined as Pulmonary hypertension, also called as PAH. This can be caused by CHD,CAD, Cirrhosis, Blood clots in lungs, Emphysema and also through Genetics[3].

The general stages of HTN are described in table-1.

The normal blood pressure is about 120/80mmHg

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Testing of Hypothesis based on Rayleigh versus Gamma Models

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Abstract: Two popular models Rayleigh and gamma (2) distributions are considered to verify whether one can be an alternative to the other. The cumulative distribution function of gamma (2) is not analytically tractable, whereas for Rayleigh distribution is tractable which motivated for the study. Test statistics based on likelihood ratio is suggested to discriminate between Rayleigh and gamma (2) models. The percentiles and power of the proposed test statistics were also tabulated, and a comparison was made with respect to the power for a given sample and level of significance.

Keywords: Rayleigh distribution, gamma (2) distribution, Likelihood Ratio Criterion.

I. INTRODUCTION

The cumulative distribution function and probability density function of Rayleigh distribution (Weibull with shape parameter 2), gamma distribution with shape parameter 2 and scale parameter σ are given by:

$$F_0(x) = 1 - e^{\left(\frac{-x^2}{2\sigma^2}\right)}; 0 \le x \le \infty, \sigma > 0 \quad (1.1)$$

$$f_0(x) = \frac{x}{\sigma^2} e^{\left(\frac{-x^2}{2\sigma^2}\right)}; 0 \le x \le \infty, \sigma > 0 \quad (1.2)$$

$$F_1(x) = 1 - e^{\left(\frac{-x}{\sigma}\right)}\left(1 + \frac{x}{\sigma}\right); x \ge 0, \sigma > 0 \quad (1.3)$$

$$f_1(x) = \frac{x}{\sigma^2} e^{\left(\frac{-x}{\sigma}\right)}; x \ge 0, \sigma > 0 \quad (1.4)$$

The frequency curve of the two distributions look alike and cumulative distribution of Rayleigh distribution is analytically invertible and that of a gamma distribution is an incomplete gamma function which is extensively tabulated in [10]. The graph of the frequency curve of Rayleigh distribution and gamma distribution with shape parameter 2 are given in figures 1.1 and 1.2.

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A REVIEW ON PROTEOMIC ANALYSIS

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ABSTRACT

Proteomics is a major component of protein research, especially its function and structure. Proteomics involves the use of technology to identify and quantify the total amount of protein present in a cell, tissue, or organism. Add other "omics" technologies such as genomic and transcriptomics to explain the protein identity of an organism, as well as to identify the structure and functions of a particular protein. Proteomics-based technologies are used in a variety of ways in different research settings such as the discovery of different diagnostic criteria, people who will develop vaccines, understanding pathogenicity patterns, modification of patterns that respond to different signals and interpretation of protein mechanisms that work in various diseases. Proteomics is really complex because it involves the analysis and classification of all genome protein signatures.

Techniques that include 2-D gel electrophoresis, mass spectroscopy with LC-MS and MALDI-TOF / MS etc., play an important role in analysing protein novels and their role in disease retention and treatment of widely used intermediate proteomics amine. However, the use of proteomics resources which includes equipment software, database and the need for skilled workers greatly increases costs, thus reducing their widespread use especially in developing countries. In addition, the proteome is highly robust due to the complex control systems that control the levels of protein production. In the current review it focuses on the

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Comparative analysis for augmented decision-making applications using deep learning models

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Abstract

Now a days decision-making plays a significant role in various applications and several research. For applications such as diseases, intelligent routing systems, and online shopping carts such as e-commerce sites, recommended systems are developed based on sentiment analysis (SA) and take accurate decision-making based on the predictions and analyze the accurate decisions based on the result analysis. When it comes to practical uses, deep learning (DL) has by far been the most popular. DL becomes an indispensable domain for several tasks in science and engineering. It is very difficult to take decisions based on traditional tests in various research areas such as disease prediction, textual sentiment analysis, and risk prediction of autonomous vehicles due to the lack of accuracy and long time for results. To address this, various approaches are proposed to adopt. Decision-making is based on multi-criticism, which is more useful to solve critical issues in making accurate decisions than previous approaches. In this paper, an improved and augmented decision-making deep learning algorithm is discussed and shows the comparison among the various DL algorithms. The performance is calculated according to the parameters.

Keywords: autonomous vehicles; decision making; deep learning; disease prediction; risk prediction; sentiment analysis.

1. Introduction

Computer scientists and engineers alike have shown a lot of interest in decision-making systems (DMS) that employ deep learning (DL) methods (Otter et al., 2020). AutoML is used in a wide variety of popular applications, including e-commerce, social networking sites (SNS), sentiment analysis (SA), and autonomous vehicles (AV) (Wang et al., 2020; Aradi, 2020). AutoML is also used to predict diseases by analyzing patients' health conditions and to predict risk for DM in AVs (Lu et al., 2020). With the help of DMS in E-commerce, researchers can easily find the most well-liked items on the site by analysing user ratings, comments, and other data.

The success of the product is taken into account when making a final choice. In the context of disease prediction, DMS is used to assess the current state of diseases based on the available data. Disease prediction can be accomplished in a number of ways, including by analysing the dataset (patient details), analyzing the CT scan images, analysing the X-ray images, utilizing DL with image processing to diagnose skin diseases, diagnosing Chronic Kidney Disease (CKD), and detecting brain tumors (Li et al.,

Original Article

An Analysis of various Machine Learning Techniques for Predicting Diabetes in its Early Stages

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Abstract

Chronic metabolic disease diabetes is analyzed based on high glucose levels in the blood, these levels become more serious to coronary heart, blood vessels, eyes, kidneys, and nerves. The most prevalent type of disease, known as type 2, generally affects most adults when the required insulin is not produced in the body. Diabetes that affects human health is type-1 diabetes. The other name for type-1 diabetes is insulin-structured diabetes. This disease causes small illnesses to the pancreas and reduces the generation of insulin gradually. Access to affordable medications, such as insulin, is essential for those with diabetes to survive. Making predictions from clinical data is one of these challenges. In information technology, gadget mastering is a developing scientific discipline that deals with the methods through which machines learn from experience. After the analysis of several Machine Learning (ML) techniques, this study aims to develop a machine that can accurately detect diabetes in a patient early on. Additionally, this project is pursuing a suggestion for a powerful method for the early identification of diabetic disease.

Keywords: Machine Learning Models, Disease Prediction, Random Forest, Logistic Regression.

INTRODUCTION

Diabetes Mellitus (DM), sometimes known as diabetes, is one of the unpredictable diseases that may occur due to the lack of insulin [1]. Insulin is one of the significant hormones which is generated by the pancreas and permits the cells to obtain glucose from food sources to provide energy to humans [2]. To increase and maintain the high glucose levels in the blood hyperglycemia is used. The two significant factors that show huge impact are: the body cannot generate the required insulin in the blood cells and it is not effectively responding to insulin. To get the energy to the human the blood glucose the required insulin has to generate. If the body doesn't use glucose for generating energy then this causes hyperglycemia. This may affect the fitness of the human. The other side effects are such as sudden heart attacks, blindness, issues with kidneys, etc.

DM is one of the most common diseases that millions of people are affecting with this disease globally. This may be increased very sharply in coming years. DM is divided into various types that most widely affect human health. The most important types of diabetes are called type 1 diabetes (T1D) and type 2 diabetes (T2D), based on insulin levels in the blood. T2D is one of the default types of diabetes and 90% of people are affected by this diabetes. T1D is one of the types of diabetes and only adults may affect by this disease. Type-2 diabetes is brought on by the body's ineffective utilization of insulin. Due to physical sluggishness and being overweight, this happens. Only pregnant women can get gestational diabetes. Due to these, it will show a great impact on the pregnancy and the fitness of the child. After the baby is born, this type of diabetes disappears, or it can cause type-2 diabetes. The main factors that contribute to T2D are lifestyle. Other types of DM include gestational diabetes, endocrinopathies, MODY (maturity Onset Diabetes of the Younger), neonatal, mitochondrial, and pregnant diabetes. These categories are based on the profile of insulin secretion and time of onset. Polyuria, polydipsia, and extreme weight loss are symptoms of DM. Blood glucose levels affect the diagnosis (fasting plasma glucose = 7. 0 mmol/L.

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Scientific Publications

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ASSESSMENT OF RISK FOR MAJOR ADVERSE CARDIAC EVENTS IN ACUTE CORONARY SYNDROME RECEIVING PERCUTANEOUS CORONARY INTERVENTION - A REVIEW

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ABSTRACT

Acute coronary syndrome is a medical emergency that needs to be identified and treated immediately since it frequently results in severe chest pain or discomfort. Active smoking, metabolic syndrome, diabetes, and hypertension are common risk factors among symptomatic Acute coronary syndrome (ACS) patients. Acute coronary syndrome (ACS) patients with symptomatic carotid stenosis who have recently undergone percutaneous transluminal coronary angioplasty (PTCA) are always categorised as being at high risk for surgery because they need to continue receiving dual antiplatelet therapy. In order to compare the prognostic performance of three major risk scoring systems, including the global registry for acute coronary events (GRACE), thrombolysis in myocardial infarction (TIMI), and prediction of 30-day major adverse cardiovascular events following primary percutaneous coronary intervention (RISK-PCI). The only scoring method that could anticipate recurrent ischemia necessitating Target vessel revascularisation (TVR) was RISK-PCI. The most precise system for determining the risk of acute myocardial infarction (AMI) is the Global Registry of Acute Coronary Events (GRACE) score. However, it is unclear whether GRACE score is applicable to the present patients with a high prevalence of

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A SYSTEMATIC REVIEW ON PAIN TYPES, PAIN PATHWAYAND ITS MANAGEMENT

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ABSTRACT:

Pain is the most prevalent sign of sickness, and it accompanies us from birth. It is a defence mechanism that the body employs in response to a potentially dangerous stimuli.According to the definition, pain is a sensory and emotional experience. It is based on the observation of psychological interpretation of the events occurring and is related to the stimulus that it produces.Depending on the interaction between the psyche and the body, pain can have an impact on both our current sensation of pain and psychosomatic illnesses. An unpleasant feeling is usually pain. The irritation of pain receptors, which are present in the skin, joints, and numerous internal organs, can result in the perception of pain.Damage to the neurological system, including the brain, spinal cord, and peripheral nerves, may also be the source of pain. The phenomena of pain are complicated. The intensity of the stimulus, a person's susceptibility, and their level of pain tolerance all affect how painful something feels.Mechanical, thermal, or chemical stimulation can trigger pain receptors. These receptors translate unpleasant stimuli into an electrical signal as a result of their activity. Nerve fibres carry this impulse to the spinal cord, from where it travels to the brain.At this stage, we realise that something is hurting us.In addition to being somatic in character and connected to the health of the body, pain is a multidimensional phenomenon. The subjective experience of pain, which is controlled by the central nervous system, is therefore just as significant as the physiological mechanism of pain. It includes the emotional components of suffering, attitude towards pain, and expression of pain.Pain can be classified in several ways. One is to separate it into acute pain and chronic pain.Understanding the fundamentals of pain treatment requires a review of pain physiology.

KEYWORDS: Pain, Types of pain, Health, Pain management.

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A SYSTEMATIC REVIEW ON RISK FACTORS AND PREDICTORS OF MAJOR ADVERSE CARDIAC EVENTS IN ACUTE CORONARY SYNDROME PATIENTS

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ABSTRACT: Cardiovascular disease, including acute coronary syndrome (ACS), remains a significant global health concern, responsible for a substantial proportion of deaths worldwide. ACS is a type of cardiovascular disease characterized by chest pain resulting from an imbalance in blood supply to the coronary arteries in the heart, and is caused by atherosclerotic plaque and thrombosis formation. Major adverse cardiac events (MACE) are a common cause of death in ACS, including non-fatal myocardial infarction, non-fatal stroke, cardiovascular death, heart failure, coronary revascularization, and ischemic cardiovascular events. While there are several risk factors associated with MACE in ACS patients, the exact causes of these events after treatment are not yet fully understood. Age, male sex, hypertension, hyperlipidaemia, diabetes, smoking, left ventricular dysfunction, severity of coronary artery disease (CAD), and comorbidities are all associated with a higher risk of adverse outcomes. However, the risk factors for first and recurrent events may differ, similarly the risk factors for long-term and short-term recurrence may also differ. Therefore, ongoing research is essential to identify and evaluate risk factors for MACE in ACS patients, particularly over the long term. Advancements in the diagnosis and treatment of ACS have led to changes in the most common risk factors for MACE. Therefore, ongoing research is necessary to inform treatment decisions and improve outcomes for ACS patients. Such studies will help to identify high-risk patients and develop personalized treatment plans that consider the individual's unique risk profile. By doing so, we can reduce the incidence and impact of ACS and related MACE.

KEY WORDS: Acute coronary syndrome, Major adverse cardiac outcomes, Coronary artery disease, Risk factors

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INCREMENTAL COST EFFECTIVENESS OF ERYTHROPOIETIN STIMULATING AGENTS IN DIALYSIS PATIENTS

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ABSTRACT

Background: Anaemia is a prevalent consequence of renal failure characterized by poor health and a higher risk of morbidity and mortality. To treat anaemia in haemodialysis patients, costly erythropoietic proteins are frequently used. Cost studies typically concentrate on medication purchase expenses. Resources for tracking anaemia, as well as the preparation and administration of an erythropoietin-stimulating agents, are additional expenses related to anaemia treatment. **Objective:** The purpose was to analyse all research articles evaluating the effectiveness of ESAs in reducing costs for dialysis patients with renal failure. **Methods:** To conduct a systematic review of studies for evaluating the cost effectiveness of ESAs for treating anaemia in dialysis patients. The data for this study is collected from various database/sources like; PubMed, ScienceDirect, and others were studied. **Results:** The results of this study reveal that managing anaemia takes a lot of effort and money, but they also suggest that using an ESA that can be taken once a month might possibly result in significant savings. Comparison of seven studies were done as per reported incremental cost-effectiveness ratio. **Conclusion:** Compared to administering ESAs to target lower haemoglobin levels (9–12 g/dL), utilizing ESAs to target a haemoglobin level of 12 g/dL is linked to inferior clinical results and a substantial rise in cost. The cost-effectiveness of utilising ESAs in the population on dialysis is estimated with a wide range of accuracy.

KEYWORDS: Erythropoietin stimulating agents (ESA), Anaemia, Haemodialysis

INTRODUCTION

Globally, both the incidence and prevalence of individuals with chronic kidney disease (CKD) are growing.[1] In individuals with chronic kidney disease who need dialysis therapy, anaemia is common and often severe. The fundamental cause of anaemia is a lack of erythropoietin synthesis by the kidneys, even though other causes including iron deficiency and shorter red blood cell survival are significant contributing variables.[2] Additionally, anaemia is associated with reduced quality of life, shorter kidney survival, a rise in morbidity and mortality, and higher costs in chronic haemodialysis patients (CHP); it is generally treated with erythropoiesis-stimulating agents (ESA).[1]

ESAs are a class of drugs used to treat anaemia brought on by end-stage CKD. They work by stimulating the differentiation of progenitor cells into RBCs in the bone marrow. Each ESA needs to be administered continuously to maintain stable serum haemoglobin (Hb) levels in the specified range.[3] The class of erythropoiesis-stimulating agents (ESA) includes epoetin alpha (Epoα), epoetin beta (Epoβ), darbepoetin, and the continuous erythropoiesis receptor activator with pegylation. Darbepoetin alfa can be taken once weekly or once every two weeks, but ESA-like epoetin alfa and Epoβ need regular administration (from three times weekly to once weekly) to maintain stable Hb levels within the recommended target range.[1] Continuous erythropoietin receptor activator (CERA) has demonstrated the ability to maintain haemoglobin levels steady and within the target with a once-monthly dose.

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A REVIEW ON PROGRESSION OF ACUTE PAIN TO CHRONIC PAIN AFTER SURGERY

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ABSTRACT:

The majority of surgical patients experience uneventful recovery and return to their regular daily activities within a few weeks. Yet, a concerning number of individuals experience prolonged postsurgical pain. But every chronic pain was once acute, which is a fact that is rarely acknowledged. The established phenomenon of acute pain turning into chronic pain places a significant strain on the healthcare system. The underlying science discussed in this article is how cellular alterations in the peripheral and central nervous systems cause peripheral and central sensitization, as well as pathophysiological changes that occur during the processing of pain. It discusses the various aspects of the transition from acute to chronic pain. There is an enlistment of the risk factors such as postoperative surgical, psychosocial, socioenvironmental, and patient-related factors, medical factors and strategies for prevention (or limitation) are offered.

KEYWORDS: Acute pain, chronic postsurgical pain, pathophysiological changes, risk factors, preventive strategies

INTRODUCTION:

Each person's experience of pain is unique, and there are numerous ways to feel and interpret pain. Pain is "an unpleasant sensory and emotional experience associated with existing or potential tissue damage, or defined in terms of such damage," according to the International Association for the Study of Pain (IASP)[1]. It exhibits a complex constellation of evolving effects involving numerous neurotransmitters and modulators, the immune system, and the peripheral, spinal, and cerebral levels[2]. Acute and chronic pain are two broad classifications of pain. In contrast to chronic pain, which is described as a painful condition that lasts longer than the typical healing period, acute pain is referred to as a painful condition with a rapid onset or of a brief duration[4]. Nociception is a sensory process that detects "actual or potential tissue damage" and is clinically characterised by hypersensitivity to mechanical, thermal, or chemical stimuli (such as when inflammatory substances are released during an injury or pressure is applied to an abdominal incision during coughing).

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A REVIEW ON COMPARATIVE EFFECT OF DICLOFENAC AND TRAMADOL AS ANALGESIC IN POST-OPERATIVE PAIN

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ABSTRACT

Pain after surgery is an essential issue. In addition to being upsetting, postoperative pain is harmful to the patient. Postoperative pain may have a substantial role in increased morbidity, delayed hospital departure, and decreased patient satisfaction. Postoperative pain is still a significant issue in surgical practise, and it needs to have its current therapy reviewed. There are several regimens in use, and their effectiveness in reducing pain has to be examined. Basing upon the VAS score the pain assessment is done. Diclofenac and Tramadol are the drugs that are used for the pain management. Diclofenac and Tramadol are well-established analgesics for postoperative pain control, although they have certain side effects that limit their acceptability. Some studies say that diclofenac and tramadol have an equianalgesic effect. While some studies say that diclofenac is more effective than tramadol. While some studies say that tramadol is more effective than diclofenac. However, the treatment to the patient which can be given depends on various factors of the patient like their age, depending on their surgery, their past medical history, etc.

KEYWORDS: Tramadol, Diclofenac, post-operative pain, VAS score, Equianalgesic.

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TICAGRELOR VS CLOPIDOGREL IN ACUTE CORONARY SYNDROME RECEIVING PERCUTANEOUS CORONARY INTERVENTION.

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ABSTRACT:

In patients receiving percutaneous coronary intervention (PCI) for Acute Coronary Syndrome (ACS), to compare the relationship between ticagrelor and clopidogrel with adverse cardiac events. In daily practice, it is important to consider the advantages and hazards of ticagrelor vs. clopidogrel. To assess the relationship between P2Y12 inhibitor adherence and Major Adverse Cardiac Events (MACE), and to compare the risk of MACE with ticagrelor vs clopidogrel in patients with ACS treated with PCI. All-cause mortality, hospitalization for ACS, unexpected coronary revascularization, or stent thrombosis within 365 days of the original PCI are considered major adverse coronary events. For ACS patients administered without revascularization, the effective platelet inhibition strategy is undefined. Patients suffering acute coronary syndromes (ACS) or getting coronary stenting are advised to take clopidogrel. Ticagrelor, a reversible oral P2Y12-receptor antagonist, may be helpful for patients with ACS and planned primary percutaneous coronary intervention since it inhibits platelets more quickly, more effectively, and consistently than clopidogrel. Relative to clopidogrel, ticagrelor minimizes ischemia events and death in acute coronary syndrome (ACS). But with ticagrelor, there was an overall significant risk of bleeding.

KEYWORDS:

Percutaneous Coronary Syndrome (PCI), Acute Coronary Syndrome (ACS), and Major Adverse Cardiac Events (MACE). Ticagrelor, Clopidogrel.

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AN OVERVIEW OF ANEMIA IN CHRONIC KIDNEY DISEASE PATIENTS

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ABSTRACT

Anemia is a known side effect of chronic renal disease, yet it is still challenging to treat. The benefits of erythropoiesis-stimulating drugs (ESAs) seem to be limited to reducing the need for blood transfusions and possibly improving quality of life. Hemoglobin levels are increased by ESAs. Prolyl hydroxylase inhibitor of hypoxia-inducible factor (HIF-PHI), Prolyl hydroxylase inhibitors (PHIs) which increase endogenous erythropoietin production, have recently been developed and show promise for improving outcomes for those with anemia brought on by the chronic renal illness. These drugs are used internationally and have been found in randomized controlled trials to be at least as effective as ESAs.On the other hand, recent clinical trials have clarified significant iron supplementation features, which may alter future treatment aims. Oral iron supplementation is the preferred form of treatment because of its ease of use and cost-effectiveness. In severe cases, ESA therapy is preferred because it provides rapid relief of the symptoms of anemia and reduces the number of transfusions required.

KEYWORDS: Anemia, chronic kidney disease, Erythropoiesis stimulating agents, Prolyl hydroxylase inhibitor, iron, blood transfusion.

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THERAPEUTIC OUTCOMES IN TUBERCULOSIS PATIENTS WITH MULTIDRUG-RESISTANCE

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ABSTRACT

Multidrug-resistant tuberculosis (MDR-TB) is the biggest health concerns in the world today, due to its restricted and expensive treatment options. The severity and burden of MDR-TB differ significantly from nation to nation & region to region. According to the World Health Organisation (WHO) most recent study, there are approximately 4,50,000 MDR-TB cases worldwide, with the majority occurring in China, India, Eastern Europeans and Central Asian Countries. MDR-TB is tuberculosis which is resistant to atleast isoniazid & rifampicin, the two most potent anti-TB drugs. Using second line medications, MDR-TB can be managed and cured. However, there are few choices for second line therapy, and requires prolonged chemotherapy(lasting at least 9 months & sometimes up to 20 months), using pricey and toxic drugs. The treatment is challenging for MDR-TB, as it requires administration of at least four antitubercular medications, many of which are held with frequent adverse reactions. Drugs should be selected based on the past medication history, known resistance patterns, and drug-susceptibility testing (DST) data, if available.

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A REVIEW ON DRUG-DRUG INTERACTIONS IN RENAL IMPAIRMENT PATIENTS

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ABSTRACT

Chronic kidney disease (CKD) involves a gradual deterioration of kidney function and it is typically present with other comorbidities, such as diabetes mellitus and cardiovascular conditions like hypertension, heart failure, and stroke. Globally, the prevalence of CKD is increasing, with estimates ranging from 11 to 13%. Several medications are used by them as a result of coexisting diseases and declining renal function. Drug interactions and adverse drug reactions (ADRs) in polypharmacy might arise as a result of different pathological and physiological changes caused by renal impairment. Use online or electronic calculators to calculate the dosages of medications cleared by the kidneys by the creatinine clearance or glomerular filtration rate. Reduced doses, longer intervals between doses, or a combination of the two are suggested maintenance dosage modifications. Although not all patients who take interacting medications experience negative side effects, it is nonetheless essential to take reasonable care to prevent accidents in all circumstances where interactions are conceivable. In observational studies conducted globally about drug-drug interaction, the prevalence of moderate to minor drug interactions is more than the major interactions. Drug interactions

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HYPERLIPIDEMIA AS A PREDICTOR FOR EVALUATION OF CARDIOVASCULAR RISK IN CHRONIC KIDNEY DISEASE PATIENTS

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ABSTRACT

Dyslipidemia is a potential risk factor for to access cardiovascular disease in chronic kidney disease patients. It promotes the identification and treatment of hyperlipidemia as a symptom of end-stage renal disease. Different phases of renal impairment are characterized by various qualitative and quantitative alterations, which are linked to the rate of glomerular filtration rate decline. Elevation of serum lipoproteins like total cholesterol, triglycerides, and low-density lipoprotein and decrease of high-density lipoprotein shortage and their atypical functions in chronic kidney disease patients as the major problem of atherosclerosis. So that studying the lipid profile in renal disease patients is essential to preventing morbidity and death because dyslipidemia, which is quite common in individuals with the condition, causes cardiovascular disease the most common cause of mortality. So strictly monitoring the lipid profiles along with regular hemodialysis and proper medical management will help to prevent various complications and will also improve the quality of life in CKD patients.

KEYWORDS: Dyslipidemia, Cardiovascular, Chronic Kidney Disease, End stage renal disease.

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HEMODIALYSIS COMPLICATIONS IN PATIENTS WITH CHRONIC RENAL FAILURE

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ABSTRACT

To identify problems in patients receiving hemodialysis for chronic renal failure and to connect them with clinical and sociodemographic parameters. Together with peritoneal dialysis and renal transplantation, hemodialysis (HD) is a common renal replacement therapy in the treatment of end-stage renal disease (ESRD). Hemodialysis can reduce morbidity and mortality in people with kidney disease, but it also comes with a number of risks that might arise from either using it long-term or during the dialysis sessions. It is the most typical technique for eliminating waste and poisonous chemicals from the body, and as a result, it is utilised to treat patients with various forms of renal failure. The development of numerous highly developed and sophisticated dialysis devices has made the therapy more practical and promising nowadays. Nonetheless, patients may still have a variety of difficulties even when receiving dialysis treatment using modern, efficient equipment. Hemodialysis is linked to a number of potentially fatal consequences, however these complications are rare and can be treated and prevented by a variety of preventative therapies provided by the medical team.

KEYWORDS: Complications, Hemodialysis, Sophisticated, Renal Failure.

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A REVIEW ON ANTIHYPERTENSIVE DRUG UTILIZATION PATTERN IN CHRONIC KIDNEY DISEASE PATIENTS

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ABSTRACT

Uncontrolled hypertension and its leading cause, cardiovascular disease, are associated with an increased risk of developing chronic kidney disease (CKD). Because of the interplay between hypertension and CKD, patients with impaired renal function are at a higher risk of cardiovascular and cerebrovascular outcomes. The purpose of this study was to examine the characteristics of people with chronic kidney disease who are also hypertensive, as well as the current antihypertensive treatment pattern in CKD patients. The ESH recommended dual and triple therapy, which was prescribed. Given how hypertension and CKD interact, it is crucial to treat hypertension aggressively to improve cardio and Reno protection in these CKD patients. Antihypertensive drug use patterns among CKD patients provide an individual's BP control and related renal outcomes. In individuals with hypertension CKD, a sensible multimodal antihypertensive regimen can improve patient outcomes.

KEYWORDS: Antihypertensive, Chronic kidney disease, and Drug Use Trend, epidemiology. Drug Utilization Pattern.

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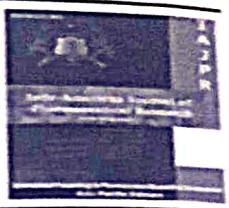

PATHOLOGICAL ROLE OF GUT MICROBIOTA AND SERUM METABOLITES IN DEVELOPMENT AND PROGRESSION OF POLYCYSTIC OVARY SYNDROME

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Polycystic Ovary Syndrome (Pcos),
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ABSTRACT

Polycystic Ovary Syndrome (PCOS) is a common female endocrinopathy with unknown origins that is characterized by hyperandrogenism, oligo-/anovulation, and ovarian cysts. Obesity, insulin resistance, and systemic low grade inflammation are all common in women with PCOS. In 2012, tremellen and pearce proposed the idea that dysbiosis of the intestinal (gut) microbiota is a contributing factor to PCOS metabolic and reproductive manifestations. The gut microbiota has been shown to play a role in the onset and progression of many diseases, including type 2 diabetes, obesity, coronary heart disease, and so on. In the past five years, studies in both human and animal models have determined that alterations in the taxonomic composition of gut bacteria are associated with PCOS. It sheds light on the pathogenesis of polycystic ovary syndrome (PCOS). This study provided the link between gut microbial composition and serum metabolites contributing to the occurrence and development of PCOS. Altogether, these results suggest that dysbiosis of the gut microbiome may be sufficient to develop PCOS-like symptoms, and the modulation of gut microbiota may be a potential therapeutic target for PCOS.

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AN OVERVIEW OF HYPERTENSION IN CHRONIC KIDNEY DISEASE

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ABSTRACT

Chronic kidney disease (CKD) and hypertension are closely related pathophysiological conditions; as a result, hypertension can deteriorate kidney function, and a progressive reduction in renal function can in turn, worsen blood pressure regulation. The prevalence of hypertensive end-stage renal disease keeps rising yearly. Controlling systolic and diastolic hypertension is crucial to lowering this incidence. The prevalence ranges from 60-90% depending on the stage of CKD and its causes. The mechanism of hypertension in CKD includes volume overload, sympathetic dysfunction, and alteration in hormonal systems that regulate blood pressure. This review presents information concerning the pathophysiological mechanism of hypertensive renal disease, the role of salt restriction, and management issues in HTN in patients with CKD including the timing of anti-hypertensive medication dosing, and blood pressure targets. Addressing this salt sensitivity is critical for the management of HTN in CKD whenever possible ACE inhibitors should be part of the treatment. Since these drugs are reno-protective beyond their antihypertensive effect in certain strategies for delaying kidney progression. In order to achieve the target blood pressure levels advised by worldwide recommendations, numerous levels of care, including a number of pharmacological and behavioural changes,

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EDIBLE PLANT DERIVED NANO-LIPIDS INCORPORATED IN THE MANAGEMENT OF CANCER: A REVIEW

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ABSTRACT

Nanomedicine is a branch of study concerned with organic medical applications at the nanoscale. The primary goals of nanotechnology in drug delivery include, more specific drug targeting and delivery, reduction in toxicity while maintaining therapeutic effects, greater safety and bio-compatibility, and faster development of new safe medicines. According to the researchers, plant-derived exosome-like nanoparticles (PENs) are likely to become viable therapeutic modalities for disease management or pharmaceutical administration. Edible plant derived nanoparticles(epNPs) have been prepared from various edible plants such as corn, citrus, grapefruit, ginger, and broccoli were studied in this review. Increased solubility and the ability to improve storage stability, enhanced permeability and bioavailability, fewer side effects, prolonged half-life, and tissue-targeted administration are some of the benefits of NLCs over conventional carriers. The systematic literature review concluded that Nanotechnology-based drug delivery systems showed considerable potential in improving cancer treatment. Combining natural medicines with chemotherapy could be a viable cancer-eradication strategy in the near future. Many natural chemicals have emerged as alternative cancer preventative and treatment options. The

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EVIDENCE BASED MANAGEMENT OF ALZHEIMER'S DISEASE

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ABSTRACT

Alzheimer's disease is a neurological brain disorder, that slowly destroys the memory and thinking skills and eventually the ability to carry the simple tasks. Evidence based Management of Alzheimer's disease is demanding, and the drugs target to improve the cognitive and behavioral symptoms at various stages to get the desired therapeutic outcomes had been implemented. Up to this date, symptomatic therapy, exists for Alzheimer's disease. The goal of therapy is to reduce or stabilize the rate of cognitive decline by initiation of cholinesterase inhibitor include rivastigmine, donepezil treats mild to moderate alzheimer's disease. The N-methyl -D-aspartate antagonist, memantine, may be used as monotherapy or in combination of cholinesterase inhibitors for moderate to severe alzheimer's disease. During this therapy, cognitive and behavior status should be monitored over 6 months interval and pharmacologic treatment of alzheimer's disease should be continued to relieve the symptoms and improve the quality of life for the person and their family and caregivers.

KEYWORDS: Alzheimer's disease, non-steroidal anti-inflammatory drugs, diagnostic and statistical manual of mental disorders, quality of life, evidence, cognitive function, randomized controlled trails.

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A REVIEW ON CAUSES OF MYOCARDIAL INFRACTION AND ITS MANAGEMENT

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ABSTRACT

Myocardial Infarction commonly known as a heart attack is the disease of the blood vessel supplying the heart muscle (myocardium) i.e; coronary heart disease. The area of heart muscle has either zero flow or so little flow that it cannot sustain cardiac muscle function is said to be infracted and the overall process is called myocardial infarction. Mainly it is caused due to oxidative stress and atherosclerosis. According to the inter heart study report, nine factors are responsible for 90% of myocardial infarction. Risk factor include diabetes mellitus, smoking, hypertension, hyperlipidemia, sedentary life style, obesity, stress and depression. The ECG, Coronary angiogram and X-ray of heart and blood vessels can be performed to observe the narrowing of coronary arteries. In this article the causes and treatment of Myocardial Infraction is described.

KEYWORDS: Myocardial infarction, Atherosclerosis, Oxidative stress, Hyperlipidemia.

INTRODUCTION

Myocardial Infarction is a term which is used for defining the myocardial necrosis, which occurs when there is not enough oxygen to meet the myocardium need and which the coronaries are unable to supply.[1] Chest pain or soreness that may radiate to shoulder, arm,

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COVID-19 MRNA VACCINE ASSOCIATED MYOCARDITIS-A REVIEW OF ITS CLINICAL ASPECTS, MECHANISMS, TREATMENT, AND PREVENTIVE STRATEGIES

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ABSTRACT

The most frequent cause of myocarditis, or inflammation of the heart muscle, is a viral infection. This unusual cardiac disorder makes it challenging for the heart to pump blood because it weakens the heart muscle. Myocarditis, an underdiagnosed illness, is a common cause of acute heart failure, abrupt death, and persistent dilated cardiac myopathy. Myocarditis is a clinical and histological term for a variety of pathological immune processes in the heart. In patients with acute and chronic myocarditis, changes in the number and function of lymphocyte subsets and macrophages, as well as antibody-mediated injury, are common. Vaccines that have shown protection against the morbidity and mortality of covid-19 associated with the uncommon side effect of acute myocarditis have confounded immunization efforts. The incidence, diagnostic measures, and treatment for myocarditis with the Covid-19 vaccine have been discussed. The incidence is about 20-30 per million cases mainly affecting male patients in the age group of under 30 years. Although the mechanisms are mostly theoretical, molecular mimicry and innate immune responses have been proposed. Individual and population-level benefits of vaccination outweigh the risks of this rare and mild form of myocarditis, according to risk-benefit analyses. Myocarditis following covid-19

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AA REVIEW ON PERCUTANEOUS TRANSLUMININAL CORONARY ANGIOPLASTY (PTCA) VERSES CORONARY ARTERY BYPASS (CABG) IN CORONARY ARTERY DISEASE (CAD) AND MYOCARDIAL INFRACTION (MI)

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ABSTRACT

Coronary artery disease is the narrowing or blockage of coronary arteries, usually caused by atherosclerosis or any obstruction in the arteries by plaque formation in the heart valves. CAD is thought to begin with damage or injury to the inner layer of a coronary artery. In India a study conducted[27] in 2016, CVDs were responsible for 28.1% of all fatalities and 14.1% of all DALYs, up from 15.2% and 6.9%, respectively, in 1990. The prevalence of myocardial infarction (MI) is now greatest in India. With 261,694 fatalities from hypertensive heart disease in 2013 (an increase of 138% from 1990), this CVD is among India's major health issues. Compared to other ethnic groups, Indians are 2-4 times more likely to be hospitalized for CAD complications, and admission rates are 5–10 times higher for populations under 40 years Diabetics have a CAD prevalence of 21.4%, whereas non -diabetics have a prevalence of 11%. Risk factors for higher prevalence of CAD in Indians include hypertension, diabetes mellitus, dyslipidaemia, smoking, and obesity. These heart conditions, such as CAD and MI, are brought on by plaque build-up along the inner walls of coronary arteries, atherosclerosis, heart valve rupture, smoking, family history, and lifestyle

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ACUTE CORONARY SYNDROME AS A POST-COVID-19 COMPLICATION: A REVIEW ON ITS PREVALENCE, POTENTIAL MECHANISMS, AND TREATMENT

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ABSTRACT

Coronavirus disease (COVID-19) is a major medical concern worldwide. The lung infection and respiratory failure that are linked to SARS-CoV-2 can result in considerable mortality and morbidity. Moreover, it has a similar inflammatory effect on different organ systems. The S proteins bind through the S1 subunit to angiotensin-converting enzyme 2 (ACE2) expressed on host cells, but merely binding to ACE2 is not sufficient for cell infection.22 Viral cell entry requires the transmembrane serine protease 2 (TMPRSS2) expressed on host cells to perform critical protein priming that leads to conformational changes, viral cell entry, and cell infection. Several COVID-19 individuals have been documented to have acute coronary syndrome (ACS). Even though the underlying pathophysiology is yet unknown. The most well-known mechanisms include oxygen supply/demand imbalance, endothelial dysfunction, prothrombotic activation of the coagulation cascade, and systemic inflammatory response mediated by cytokines. In addition, viral respiratory infections have been linked to a higher risk of MI due to gene expression that is prone to stimulating platelet activation. Further in-depth research on the relationship between COVID-19 and ACS is required to see whether there is a direct causative or

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CLINICAL MANAGEMENT STRATEGIES ON HEART FAILURE

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ABSTARCT

Acute heart failure (AHF) is a syndrome defined as the new onset (de novo heart failure (HF)) or worsening (acutely decompensated heart failure (ADHF)) of symptoms and signs of HF, mostly related to systemic congestion. Heart failure typically affects the elderly population, and as life expectancies rise and chronic medical diseases are better managed, more people are projected to develop the ailment. Recent classifications of heart failure include heart failure with diminished and preserved ejection fraction. Heart failure has been treated with a variety of medical and device-based therapies throughout the past few decades. Both in terms of morbidity and mortality, these treatments have improved patient outcomes.

INTRODUCTION

Heart failure (HF) is a chronic condition caused by either inadequate myocardial relaxation, reduced ejection. Heart failure (HF) is a clinical illness characterized by anatomical and functional abnormalities in the myocardium preventing ventricular filling or blood ejection. Reduced left ventricular myocardial function is the most prevalent cause of HF; however, dysfunction of the pericardium, myocardium, endocardium, heart valves, or great vessels, alone or in combination, is also related with HF. Increased hemodynamic overload, ischemia-related dysfunction, ventricular remodeling, excessive neuro-humoral stimulation, abnormal

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HYSTEROSCOPIC RESECTION OF THE SEPTUM IMPROVES THE PREGNANCY RATE OF WOMEN WITH UNEXPLAINED INFERTILITY: AN OVERVIEW

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ABSTRACT

In some women Congenital anomalies can be seen among which abnormal uterine cavity due to formation of septum is common. Due to the formation of this type of uterus many consequences can be observed which includes spontaneous abortions, stillbirths, infertility, preterm delivery and complications during delivery. To overcome this problem a primary and simple surgical technique named hysteroscopic metroplasty was introduced for the safe removal of the septum. The patients did not experience dysmenorrhea and recovered well. Many studies were performed on this technique which concluded that removal of septum in women with both septate uterus and unexplained infertility is beneficial than in women with only unexplained infertility. Fertility and live birth rates were significantly improved, and spontaneous abortions were decreased in women who underwent this technique.

KEYWORDS: Septate uterus, Hysteroscopy, Infertility, Safe, Stillbirths, Congenital anomalies, Dysmenorrhea.

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A REVIEW ON ROLE OF CALCITONN GENE RELATED PROTEIN ANTAGONISTS IN MIGRAINE

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ABSTRACT

The neuropeptide calcitonin gene-related peptide (CGRP) has long been hypothesized to play an essential role in the pathophysiology of migraine. Although clinical findings are consistent with such a role, the specific pathogenic mechanism of CGRP in migraine remains speculative until recently. Advances in molecular neuroscience are beginning to elucidate the pathogenic mechanism of CGRP in migraine. This article describes the hypothetical role of CGRP in migraine and outlines current knowledge of the molecular mechanism of this neuropeptide in the pathophysiology of migraine. Studies of cultured trigeminal neurons have shown that CGRP is released from trigeminal ganglion cells, CGRP transcription is increased under conditions that mimic neuronal inflammation, migraine drug therapy reduces CGRP release, and CGRP transcription is performed. Inhibits and shows tumor necrosis factor α (TNFα). Intrinsic inflammatory mediators associated with migraine can stimulate CGRP transcription. Taken together, the results suggest that in migraine, activation of the trigeminal nerve releases CGRP and other peptides that cause the release of pro-inflammatory mediators. These mediators further increase CGRP synthesis and release over hours to days, corresponding to the duration of a typical migraine episode of 4 to 72 hours. Increased synthesis and release of CGRP may be mediated by activation of the mitogen-activated protein kinase pathway. It is regulated by endogenous inflammatory substances such as TNFα and can be affected by drugs such as sumatriptan.

KEYWORDS: Headache, Migraine, Crgp, Crgp Antagonist.

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A REVIEW ON ORGANOPHOSPHORUS INTENDED POISONING CLINICAL MANAGEMENT STRATEGIES

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ABSTRACT:

Organophosphate compound (OPC) is one of the most common causes of auto poisoning, seen in India. They are used as insecticides, herbicides, and anti-helminthics which are also used in the chemical industry. The OPCs which are used in the 1940s around world as pesticides were source of poisoning and were keen to cause control problems. OPC poisoning cases are estimated at 3 million annually worldwide with approximately 10% i.e., 300,000 deaths. Of these, about 1 million are accidental and several million were incidental poisoning and suicides. Mortality rates from planned ingestion of OPC insecticides in developing Asian countries are around 20% and can be as high as 70% in some seasons and in rural hospitals. Medical treatment and control of organophosphate pesticide poisoning are difficult, especially in difficult settings where most of these patients are located. Clinical exercise is often less than ideal, with poor preliminary resuscitation, stabilization, and poor antidote use. Decontamination, specific antidotes, and preventive measures remain the mainstay of treatment. This review addresses the mode of action, clinical features, management, complication, and post-mortem findings as well as medical & legal aspects of OPC poisoning.

KEYWORDS: Organic Phosphate Poisoning, Pesticides, Organic Phosphate Compounds, Clinical Features, Management, etc.

INTRODUCTION:

Hundreds of Organophosphate (OP) compounds are present to be had to apply as pesticides[1]. OP pesticides inhibit each cholinesterase and Pseudo Cholinesterase activity, as they're irreversible cholinesterase inhibitors. The buildup of acetylcholine at synapses caused by the suppression of cholinesterase activity leads to overstimulation and disruption of neurotransmission in both the central and peripheral nervous systems[2]. These actions appear to be the cause of the nicotinic and muscarinic receptors' heightened manifestations. OP pesticides are one of the maximum vital reasons for poisoning in Asia, as in lots of growing countries[3]. There are several different ways to be exposed to OP pesticides, including cutaneous, gastrointestinal, inhalational, and intravenous routes[4]. Poisoning takes place because of agricultural use, unintended publicity, suicide, and, rarely, homicide[5,6]. The mortality charge of OP poisoning is high: deadly problem is regularly associated with a put-off in analysis or unsuitable management. Early analysis and appropriate treatment, conversely, are regularly existence saving, despite the fact that the scientific direction of OP poisonings is probably pretty

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PHENYTOIN TOXICITY AND IT'S MANAGEMENT - A SYSTEMATIC REVIEW

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ABSTRACT

Phenytoin toxicity occurs when serum levels exceed the therapeutic level, leading to symptoms such as nystagmus, slurred speech, and decreased coordination. This toxicity is sometimes caused by drug interactions. Phenytoin is one of the most commonly used anticonvulsants in the developing world, but lack of monitoring and concurrent medications can easily lead to toxicity. Phenytoin toxicity may be brought on by dosage variations, medication interactions, physiologic changes, or intentional overdose. In more severe situations, seizures, a depressed conscious state, and coma may also occur. Nevertheless, nausea and central nervous system dysfunction—particularly disorientation, nystagmus, and ataxia—are the most common symptoms of intoxication. Ingestion of phenytoin rarely results in cardiac problems such arrhythmias and hypotension, although parenteral administration of phenytoin or fosphenytoin may cause them. Intoxication with phenytoin alone is unlikely to result in death. Zero-order pharmacokinetics can cause a significantly lengthened half-life in overdoses, which can lead to prolonged symptom duration and, consequently, longer hospitalisation with its associated problems. Supportive care is the mainstay of treatment for a person suffering from phenytoin intoxication. No antidote exists, and there is no proof that gastrointestinal cleaning or

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A REVIEW ON INCIDENCE, CLINICAL FEATURES AND MORTALITY IN PARAQUAT POISONING PATIENTS

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ABSTRACT

A xenobiotic that is poisonous to the body is called a poison. Depending on the exposure, poisoning may happen on purpose or by accident. When exposed to the poison for an extended period, illness may take several days, weeks, months, or even years to manifest. Because of its effectiveness and minimal environmental toxicity, paraquat is well known. No matter how much paraquat is consumed, the consequences on the GIT, kidney, liver, lungs, and other organs can be fatal. The fatality/death/mortality rate from intentional/ accidental exposure to paraquat increases in the absence of a particular antidote. Thus, we analyzed the literature with an emphasis on paraquat poisoning publications to shed light on its prevalence, clinical manifestations, and death through renal, respiratory, and multi-organ failure/damage.

KEYWORDS: Mortality, Antidote, Multi-organ failure, Renal failure, Respiratory failure, and GIT (Gastrointestinal tract).

INTRODUCTION

Paraquat (1,1[1]-dimethyl1-4,4[1]-bipyridylium dichloride) is used as a Broad-Spectrum herbicide with low price discovered in 1955 in many developing countries, suicide with the

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A REVIEW OF THE KEY IMPEDIMENTS TO MEDICATION ADHERENCE AND NON-COMPLIANCE AMONG STROKE SURVIVORS

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ABSTRACT

To recognize and document obstacles to medication compliance for secondary stroke prevention. Making sure that patient's take one's medications as prescribed can be difficult for medical professionals. Although medications are more efficient at lowering the risk of subsequent strokes, long-term treatment compliance is low. Studying the rate of adherence to clinical performance measures and adherence to medications for stroke secondary prevention. Patient's with stroke are more likely to have lower levels of adherence to their self-care routines and medications because of polypharmacy and multi-morbidity. According to studies, the high adherence rate may have increased as a result of people's concerns for their health, the fact that they were given good medication education and the encouragement of family members to take their medications. Regarding rising concerns about drug costs and adverse effects, the lack of social security insurance was the main obstacle to stroke survivors taking their prescribed medications. Worrying about taking medications for a long time was the most significant barrier among the significant concerns about medications that had increased (related to worry, disruption, long-term effects, and medication dependence).

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A REVIEW ON POST-STROKE NEUROPSYCHIATRIC COMPLICATIONS

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ABSTRACT

Post-stroke neuropsychiatric complications are a group of mental health disorders that can occur following a stroke. These complications can include depression, anxiety, psychosis, cognitive impairment, and behavioral changes. They can have a significant impact on the recovery and quality of life of stroke survivors, as well as their caregivers and families. Research has shown that post-stroke neuropsychiatric complications are common, affecting up to 50% of stroke survivors. The underlying mechanisms of these complications are not fully understood, but it is believed that they result from a combination of biological, psychological, and social factors. Effective treatment of post-stroke neuropsychiatric complications requires a multidisciplinary approach that includes medication, psychotherapy, and rehabilitation. Early recognition and management of these complications are crucial to improve outcomes and prevent long- term disability. In conclusion, post-stroke neuropsychiatric complications are common and have a significant impact on the recovery and quality of life of stroke survivors. It is important for healthcare providers to recognize and treat these complications early to improve outcomes and prevent long-term disability.

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A REVIEW OF HEART-BRAIN INTERACTION IN STROKE

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ABSTRACT:
Neurocardiology is an emerging field that studies the interaction between the brain and the heart, especially the effects of brain damage on the heart and the effects of cardiac failure on the brain. Early diagnosis of cardiovascular dysfunctions induced directly by stroke has increased. The existence of a two-way relationship between the brain and the heart is now universally acknowledged by researchers. This hypothesis is supported by the fact that stroke patients are most susceptible to serious cardiac complications. The primary pathological mechanisms responsible for brain-heart axis dysregulation following stroke have been identified as sympathetic hyperactivity, hypothalamic-pituitary-adrenal axis, immunological and inflammatory responses, and gut dysbiosis. Furthermore, research has shown that the main causes of mortality after stroke are heart attacks, congestive heart failure, hemodynamic instability, left ventricular systolic dysfunction, diastolic dysfunction, arrhythmias electrocardiographic anomalies, and cardiac arrest, all of these conditions are more or less linked to poor outcomes and death.

Keywords: Cardiovascular dysfunction, brain-heart axis, gut dysbiosis, inflammation, congestive heart failure

INTRODUCTION:

Cerebrovascular disease patients frequently have cardiac damage [1]. Heart injury results in serious complications as such early clinical deterioration and death by stroke. Stroke is a common complication of heart disease and vice versa [2]. Stroke (ischemic stroke, transient ischemic stroke(TIA), hemorrhagic stroke, and subarachnoid hemorrhage (SAH)) induces neurovascular uncoupling and disrupts cerebral auto-regulation, which then renders cerebral blood flow directly dependent upon cardiac function [1]. Acute brain injury can cause cardiac dysfunction even in the absence of cardiac illness, which can increase mortality and result in cardiac complications such as heart failure, which in turn can increase mortality and lead to cardiac complications, such as heart failure, reversible damage such as neurogenic stress cardiomyopathy (NSC), and Takotsubo cardiomyopathy [3,4]. This review aims to focus on mechanisms involved in heart and brain interaction in stroke patients.

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A REVIEW ON RATIONAL USE OF ANTIBIOTICS

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ABSTRACT

Antimicrobial resistance and its cost of use increases as a result of excessive and improper antibiotic usage which has become a global health issue. As a result, several strategies aiming at improving antibiotic therapy have developed up to this point. The goal of this study is to assess rational antibiotic usage and the influence of new limitation policies, as well as their reinforcement by infectious disease specialists, on hospital-wide antibiotic use. Individual difficulties stemming from unreasonable drug usage can have a long-term harmful impact on public well-being. Antibiotics are the most commonly used inappropriately, and thus disrupts the long-term sustainability of health gains in terms of both cost and productivity. There are currently worldwide and regional guidelines for establishing a government structure dedicated to monitoring and improving medicine use, as well as conducting a national situation analysis in order to design a strategy. In response to country requests, the WHO Regional Office for Southeast Asia is currently conducting national situational studies to assist countries in developing coordinated action plans. After the study, it was concluded that antibiotic use was reduced and sensible antibiotic prescriptions were increased in hospitals as a result of the restricted policy.

KEYWORDS: Antibiotics, Rational use, Irrational use, Infectious Disease, Cost

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AROMATHERAPY IN THE TREATMENT OF ALZHEIMER'S DISEASE AND DEMENTIA: SYSTEMATIC REVIEW

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ABSTRACT

In the realm of dementia care, complementary medical therapy has sparked a lot of interest, and aromatherapy and essential oils are becoming more popular. Although essential oils from plants have been used therapeutically for hundreds of years to improve physical and psychological well-being, there is little empirical evidence of their efficacy. The therapeutic use of essential oils is predicted to drive the increase, which will likely result in a surge in demand for aromatherapy goods. The results of essential oils in relevant in vitro and in vivo models are supported by evidence from mechanistic, neuropharmacological research. It's no longer a secret that aromatherapy is a likely successful Alzheimer's treatment. Following the completion of clinical studies, a potentially effective and safe medication for psychiatric diseases, including Alzheimer's disease, is now available. Aromatherapy is a non-pharmaceutical dementia treatment that has been shown to be effective. Aromatherapy may help people with Alzheimer's disease improve their cognitive function.

KEYWORDS: Alzheimer's Disease (AD), Behavioral and Psychological Symptoms of Dementia (BPSDs), Essential oil (EO).